

food MARKETING & TECHNOLOGY

इंडिया

PANWA GROUP
Innovation in life

No lumping
during
conveying

Masalas • Chemicals
and API Powders (Pharma)

ALL YOU NEED IS MOISTURE-FREE AIR



Bry-Air

Dehumidifiers

Remove moisture effectively

Benefits of moisture-free air

- No lumping, clogging or blockage of pneumatic conveyors
- Increased productivity
- Retain original quality and flavour
- Extend shelf life

BRY-AIR (ASIA) PVT. LTD.

Plants: India • Malaysia • China • Switzerland • Brazil • Nigeria
Overseas Offices: Vietnam • Indonesia • Philippines • Korea • Japan • UAE • Saudi Arabia • Bangladesh • USA • Canada
Phone: +91-124-4091111 • E-mail: brymarketing@panwa.com

www.bryair.com

Leaders in Dehumidification ... Worldwide

Our cones make
everything better



HYDERABAD | COIMBATORE | AHMEDABAD



Sales & Corporate Office

Plot No. 10, IDA Uppal, Ramanthapur Main Road,
Hyderabad 500 039, Telangana, India.
Tel.: +91 40 2720 5293/ 94
bigdrumindia@bigdrum.com
www.bigdrumindia.com

Contact us today, for your free sample



FROM RED HOT TO THE PINK OF HEALTH.

ANTHOCYANINS FROM ROHA.

Extracted from fruits and vegetables like Grape Skin, Elderberry, Red Cabbage, Red Radish, Purple Corn, Purple Sweet Potato and Purple Carrot, Roha's range of Anthocyanins come in a range of shades from the red and pink palettes. These water soluble, clean label colors offer pigment stability and good tolerance to heat and light, making them the ideal choice for preserves, jams, jellies, confectionery, prepared food and bakery products.

Product Range:

• Futurals Pro Prune • Futurals Pro Raspberry • **Natracol Black Carrot**





Automation Brings Quality to Food Processing

Tradition used to be commonplace and made up a strong part of the food and other craft industries. Fathers passed on their knowledge to sons, mothers to daughters and the world kept on turning.

Recent news included plans for a food manufacturer's multi-million dollar order for software, hardware and other IT technologies to update and optimise their global facilities and logistics. This kind of order volume may make many in the food processing industry wonder if they have chosen the right career path. Are automation and traditional crafts polar opposites? Or can they co-exist?

Hand crafted products are rightly believed to have a high quality. This is why they have survived for so long. However, because something is good, the demand increases and the more people who want something, the harder the craftsman has to work. Before long he will reach his maximum capacity, even if he has trained his sons to do the work just as well.

The quality of a product is also reflected in its consistency, despite the speed it needs to be made. Improved information exchange leads to improved market knowledge and orders from a wider audience. Automation has made a lot of improvements in every stage of the food industry chain. This has increased production and consolidated product uniformity, at the same time reducing the possibility of human error.

Information technology, when used wisely, can help achieve consistency in cream cakes, perfection in packaging, repeatability in recipes and high quality of a brand product wherever it is found throughout the globe. That this can all be monitored from a single central point is a sign of the times.

Nowadays it is possible for food products to be grown, selected, mixed, baked, packaged and distributed without the need for human intervention. And still it can taste just like grandmother used to make. Or a little different.

Sincerely

Benno Keller
keller@harnisch.com

Ian D. Healey
healey@harnisch.com

Dear Reader!

Welcome to the August issue of our Magazine. This is the month of "Rakshabandhan" – a festival which means a 'Bond of Protection'. Festivals are all about sweets and delicacies but because of today's pandemic situation, food ingredients, processing, and packaging are all major concerns.

Keeping in mind the current situation, articles for each section have been put together. One of them is "**Biodegradable Packaging**".- that is packaging that includes the use of biopolymers. Biopolymers are the molecules that are found in living organisms, such as cellulose and proteins. Because of these characteristics they can be safely consumed, degrade quickly, and often be created from waste plant products.

In this edition, there is an interesting article on "**High Moisture Meat Analogue (HMMA) through Cooking of Soy Proteins & Microalgae**". Increasing trends towards saving lives of Animals over the world, HIGH MOISTURE MEAT ANALOGUE (HMMA) is a good substitute to meet the needs of meat consumption while retaining the taste and feel of muscle meat products. HMMA tastes and feels like Animal muscle meat and can have equivalent nutritional value. Further advantages are it avoids disease transmittance from animal to consumer, saving animal lives, and giving economical benefits.

Ingredient section includes a knowledgeable article named "**Fortification of foods**". This is undoubtedly a very promising approach towards mitigating the current level of malnutrition in the country. However there is a need to continuously evaluate and validate the efficacy of fortified foods on human population since with changing lifestyle patterns and eating habits, the diet of a region also gets modified dynamically.

Processing section includes various articles. One of them is "**Grain Processing**". Processing of agricultural commodity specially grains is an important practice for their further use as a raw ingredient. Grains undergo various post-harvest pre-treatments and processing steps to make them available for final consumption. The post-harvest processing of grains falls in different categories.

Another interesting article is on "**Yeasts in Foods- A Source of Immunity Enhancer**". Yeasts can be consumed mainly in two forms- active and dead. Depending upon the form to be utilized, the active form is further available in dried (powder), compressed and liquid form. The active form of yeast carries out the process of fermentation in various foods as well as leavening during baking. Dead yeast cells do not cause fermenting activity and is only available in dried (flakes) form.

Apart from these articles there is a report on a webinar which focused on "**Digital Packaging Creating Brand New Opportunities**". This webinar covered global innovations in digital packaging formats and highlighted digital printing technology as the greenest printing Technology.

Linda Brady Hawke

COLORS SO ATTRACTIVE THEY DO THE TRICK, EXPERIENCE THE POWER OF TURMERIC.



The Turmeric range from Futurals and Natracol are made from pure, natural Curcumin and are available in water soluble, liquid and powder form each with a high heat tolerance. These attractive shades are suited for almost any food application, so if you are looking for colors that promote a healthy appetite, give us a call.

Applications: Bakery, Confectioneries, Beverages, Prepared Foods, Dairy and Pharmaceuticals.

Contents

August 2020

Food Safety Q & A

- 8 Food Safety Helpline, Everything you need to know about Food Safety & FSSAI Compliance

Ingredients

- 10 Fortification of Foods: An approach towards nutritional security
14 Yeasts in Foods: A Source of Immunity Enhancer
20 New Reference of Skimmed Milk Powder Meets the Needs of the Condensed Milk Market



Processing

- 22 Grain Processing – Seed to Food
25 HPP Technology Increases the Shelf Life in Food and Beverages by four Times
28 Insights into Continuous Mixing
31 Drive Solutions for the Bakery Industry



Interview

- 32 CEO FSSAI

Packaging

- 36 PANDEMIC LOCKDOWN: Advantage Packaged Food Product Manufacturers
40 Securely Packed with a Freshness Seal
42 First-of-its-kind Low-Energy Processing Line for Juice, Nectar and Still Drinks
44 Biodegradable Packaging in Food Industry

Industry Insight

- 45 A Webinar on Digital Packaging Creating Brand New Opportunities

Food Technology

- 46 High Moisture Meat Analogue (HMMA) Through Xtrusion Cooking of Soy Proteins & Microalgae

It is only because of **QUALITY**; national leaders and MNCs are among our loyal customers during all 50 years of our journey creating the best Filling Machines in the country.



Our machines have been excelling through out the nation and in 26 countries - packing Ice-cream, Curd, Yoghurt, Margarine, Lassi, Ghee, Cheese, Shrikhand, Jam, Peanut butter, Tomato catchup, Milk powder.....

The country fondly know us as ' Panchals '



Celebrating **107th** Year
1913 - 2020



D&B for D-U-N-S
No : 91- 844 - 4055
Dt. May 26, 2012



PWS ENGINEERS PRIVATE LIMITED

Panchal Estate, Nr. Madhubhan Resort, Anand – Sojitra Road, **ANAND 388 001** (Gujarat) India

Phone : 02692 – 261424 / 261716 / 261849 / 261948

Email : pws@pwsengineers.com, Website : www.pwsengineers.com

Food Safety Helpline, Everything you need to know about Food Safety & FSSAI Compliance



Food Marketing & Technology magazine, India is in the forefront of innovation meeting the ever changing demands of the industry with practical and usable content. FSSAI has actively been working on food safety regulations overtime. The Covid pandemic has compelled us to rethink on every aspects of food production. Thus Food Marketing & Technology Magazine together with Food Safety Helpline will address the industry's day-to-day challenges.

Since 2013 the team at FoodSafetyHelpline.com has published more than 1500 articles and answered thousands of questions and we are now very pleased to further expand our reach and support to even more food businesses.

To help the food businesses achieve their goal of self-regulation and compliance we had established Food Safety Helpline in the year 2013 to disseminate the changes in a simple and easy to understand format and answer queries with the help of experts in the field.

The Food Safety and Standards Act 2006 has dramatically transformed the food regulatory system in India. Food safety and Standards Authority of India (FSSAI) has combined a labyrinth of complex laws into a much more simplified single law and has moved from an enforcement-based regulatory system to a self-regulatory system.

FSSAI has been actively working with various stakeholders including large and small food businesses, street food vendors, other regulators, consumer organizations and even international regulatory and standards bodies like ISO and FAO.

This has helped to rapidly evolve rules and regulation to ensure availability of safe and nutritious food for all, while keeping in mind the interests of all stakeholders and harmonization with global regulations.

The onus of providing safe and nutritious food has been shifted to the food business operators and they must keep themselves updated with the latest requirements and quickly adopt new requirements to ensure ongoing compliance.

This partnership will be in the form of a regular column wherein we will be answering questions from readers.



Q I am about to start a food business in different states and as it is just the beginning, and if the turnover would be less than 12 lacs for the first year then what certificates do I have to ensure before starting it?

If you are expecting that your annual turnover will not exceed Rs. 12 lacs then you can apply for the Registration Certificate. If in case, you are expecting your annual turnover to cross Rs. 12 lacs then you must apply for the license. If you intend to set up a processing unit then instead of annual turnover the production capacity will be taken into consideration. For a production capacity of Up to 100 Ltr/Kg per day, a registration certificate is required to be taken and if in case the production capacity is More than 100kg/ltr to 2 MT /day, a license will have to be acquired. You may also have to acquire a central license for Head Office if in case you have your business operations in more than one state.

Q I want to start a Dairy unit with 30 animals. Is it necessary to register this dairy unit with FSSAI?

As per FSS (Licensing & Registration of Food Businesses) Regulations, 2011:

You need to apply for the Registration Certificate if the production capacity of the dairy unit is Up to 500 litres of liquid milk per day.

State License – 501 to 50,000 litres of liquid milk per day or upto 2500 MT of milk solids per annum.

Central License – More than 50,000 liters of liquid milk/day or more than 2500 MT of milk solid per annum.

Q I want to start a spice/masala business, so how can I apply for the license with FSSAI. Do I have to get my produce tested at any lab?

You will have to first register your food business under the Food Safety & Standards Act, 2006. There is an online procedure for licensing/registration. Please check for more details here: <https://foodlicensing.fssai.gov.in/index.aspx#>

At the time of applying for a license, an analysis report (Chemical & Bacteriological) of water from a NABL accredited/FSSAI Notified lab laboratory needs to be submitted.

Also, as per one of the conditions of the license, the regulation states;

Ensure testing of relevant chemical and/or microbiological contaminants in food products in accordance with these regulations as frequently as required on the basis of historical data and risk assessment to ensure production and delivery of safe food through own or NABL accredited /FSSAI notified labs at least once in six months.

Q If food is detected as unsafe by the laboratory and that food is purchased from wholesaler and sample of food is collected from the retail store, then who is responsible; the retailer or the wholesaler?

It depends upon the circumstances; if the sample has been taken in sealed & original condition by the FSO from the retailer and the cash memo/bill was handed over to the FSO at the time of sampling, then finally by the court or adjudicating officer, the retailer may be spared and the wholesaler/manufacturer may be held responsible.

Q When a food product is packaged by a manufacturer of food products for another brand (Manufactured and processed by us and packed for and marketed under another brand name). Is

there a requirement to put the FSSAI number of the brand under which the product is marketed?

As per FSS (Packaging & Labelling) Regulation, 2011; the FSSAI logo with the license number of the Brand owner has to be mentioned on the label of the food product. And for Manufacturer & Distributor/Wholesaler etc. only the License number has to be mentioned on the label of the food product.

Q Our organization is the instant tea premix manufacturer which comes under proprietary food category, as per FSSAI rules please let us know which applicable Indian standard is available?

The definition for Proprietary Food is mentioned under FSSAI Regulations. You can go through the definition and the guidelines mentioned under clause 2.12 of Food Safety and Standards (Food Products Standards and Food Additives) Regulation, 2011 where standards for Proprietary Food have been discussed. You can read/download the standard from the following link: <https://www.fssai.gov.in/cms/food-safety-and-standards-regulations.php>.

Q I have purchased a pack of 5 kg Atta, the date of packaging is 03/07/2020 best before 4 months. Is this packaging date is; 03 July 2020 or 07 March 2020?

In India, we mostly follow the DD/MM/YYYY format, so it will be 03 July 2020. Moreover, the labeling guidelines as per FSS (Packaging & Labelling) Regulation, 2011 have also discussed the same format for food product labels.

Q What kind of electronic instrumentation, test, and measurements are used or required by you to maintain the quality and safety of the foodstuff?

The answer to your question can literally run into hundreds of pages as a huge variety of instruments are used for testing the quality of products to ensure food safety. Nearly all the small and big equipment used in food testing are currently imported and very few are manufactured in India. We feel there is a huge scope for developing chromatographic equipment and manufacturing them locally. These might be very complex and difficult to develop and you can possibly look at starting with the easier and smaller equipment.



FORTIFICATION OF FOODS

AN APPROACH TOWARDS NUTRITIONAL SECURITY

■ By Ria Bhadra*

INTRODUCTION

The alarming status of under-nourished population in India seeks a national attention. The wide range of ailments arising out of undernourishment in India and the fact that it prevails in one way or the other in almost all the age groups starting from infancy to the aged classes of population, indicates the need of effective strategies in food consumption patterns. About 1.3 billion of people in India are vitamin and mineral deficient. Deficiency of folic acid in infants below five years of age is known to cause at an estimate of one lakh deaths per year.

FORTIFICATION OR ENRICHMENT IS A PROCESS BY WHICH THE ESSENTIALLY IMPORTANT MICRONUTRIENTS SUCH AS IRON, FOLIC ACID, IODINE, VITAMINS AND MINERALS ARE ADDED TO THE STAPLE FOODS

In more than 50 percent pregnant women, the iron deficiency causes anaemia which leads to a high number of infant mortality cases. At present times, safe, hygienic and nutritionally superior foods have become the initial focus of both the food producers and the consumers. Therefore, it is the right time to come up with all the emerging approaches in both food processing as well as consumption practices. One of the similar approaches that have been a part of establishing a nutritional security is food fortification or enrichment.



Quality in process automation

Our competence for your application

We have been manufacturing products for automation technology since 1969. Our expertise in process products includes pressure, level, flow and temperature sensors. To make sure we satisfy the highest quality standards, we have an independent, accredited calibration laboratory. Hygienic materials and surfaces, protection rating IP 69K, EHEDG Certification and other approvals such as 3A Sanitary standards, FDA and EC 1935/2004 are only some of the high standards our sensors live up to in this sector. We invite you to challenge us! ifm – close to you!



ifm electronic India Private Limited
Plot No. P-39/1, MIDC Gokul Shirgaon - Kolhapur - 416234 - Maharashtra
Phone: +91 231 267 2770 - Fax: +91 231 267 2388 - Toll Free: 1800 233 2065
E-mail: info.india@ifm.com - Internet: www.ifm.com

IN THE WESTERN COUNTRIES, THE FORTIFICATION OF FOODS HAD BEEN MADE TO BE MANDATORY BY THE GOVERNMENT WAY BACK DECADES AGO, BUT IN INDIA, THE FORTIFIED FOODS HAVE GAINED POPULARITY IN RECENT TIMES AND GRADUALLY GAINING CONSUMER ACCEPTANCE.

FOOD FORTIFICATION

Fortification or enrichment is a process by which the essentially important micronutrients such as iron, folic acid, iodine, vitamins and minerals are added to the staple foods in order to address the nutrient deficiencies in common people. These are nutrients which are either present in low amounts naturally in these foods or lost during the stages of their processing. Although the minerals and vitamins are required in very low amounts for normal functioning of the human body, however, the absence of adequate quantities could lead to serious health issues like Neural Tube Defects (caused by deficiency of folic acid), anaemia (caused by iron deficiency), poor bone health (caused by calcium deficiency), poor vision/loss of vision (caused by Vitamin A deficiency), goitre and mental disability in children (caused by iodine deficiency), bleeding gums and loose teeth (caused by Vitamin C deficiency) and so on. There are

Recommended Daily Intake (RDI) levels already established for all the nutrients. However, with the current lifestyle and inadequate physical activity, the food intake of individuals has been found to be insufficient to provide the adequate levels of these essential elements. Hence, foods already enriched with the required levels of these nutrients should meet the nutritional requirements of any individual. In the Western countries, the fortification of foods had been made to be mandatory by the Government way back decades ago, but in India, the fortified foods have gained popularity in recent times and gradually gaining consumer acceptance. The Government in India has also henceforth mandated the fortification of several foodstuffs. On proper evaluation and identification of nutritional gaps in India, recently the Government bodies like the Ministry of Women and Child Development has mandated the fortification of rice in all midday meals and public

nutrition programmes covered under the Integrated Child Development Services (ICDS) in India. The department also envisions the fortification of foods like wheat flour, oil, milk, salt etc. to be implemented soon.

THE FOOD VEHICLES OF MICRONUTRIENTS

In order to mitigate the vitamin and mineral deficiency diseases, the best way is to enrich the most common mass consumed foods of the region. In India, the concept of fortification had been in Vanaspati (fortified with Vitamin A) and salt (with iodine) since 1950's. With increasing needs of human nutrition, this has been extended to more generally available and basic foods. Since rice and wheat are the most common staple foods and undergo losses of vitamins and minerals during the milling process hence, they have been considered as excellent food vehicles intended for the delivery of micronutrients like iron, folic acid, vitamin A, B-vitamins and zinc. Milk which is another indispensable part of human diet also undergoes thermal processing leading to losses of vitamins is most commonly fortified with Vitamin A and Vitamin D. In cooking oils like palm oil, sunflower oil, coconut oil, soybean oil etc. fortification of Vitamin A and D are commonly carried out as these vitamins are fat soluble in nature. The presence of adequate amounts of Vitamin D also help in the absorption of calcium in the body.

CONCERNS IN FOOD FORTIFICATION

Since the prospective of food fortification appears as a public health responsibility, hence the entire process follows certain guidelines necessary to yield the appropriate and intended fortification levels. The dosages of the micronutrients in the foods targeted to be fortified





has to be within a range of 15-50% of the physiological reference intakes of individuals as per average daily servings and should meet at least 10% of the human physiological requirements. During the estimation of the amounts of nutrients to be added in a food for fortification, the factors like its natural content in the food, losses during manufacturing and storage and its interaction with other ingredients present in the food needs to be taken into account. Accordingly the forms, methods and stages of fortification has to be decided. Moreover, it is extremely important that the forms of micronutrients chosen are safe and do not have any adverse health effects. The foods on fortification should not intervene with the sensory profile of the desired nature

of food products, for eg., ferrous fumarate and elemental iron if used for rice fortification have negative effects on color, taste as well as bioavailability, unlike other cereals.

KEY PLAYERS IN INDIAN MARKET ON FORTIFIED FOODS

There are several renowned players in the Indian food market like ITC, Nestle India, Britannia, Amul, Hindustan Unilever Limited, Marico India, Fortune, Mother Dairy, Tropicana, Minute Maid etc. who have already commercialised a varied range of fortified/enriched food products with vitamins, minerals, natural antioxidants, PUFAs, etc. and have made successful product claims on their labels and there are newer entrants adding up into the list.

CONCLUSION

Fortification of foods is undoubtedly a very promising approach towards mitigating the current level of malnutrition in the country. However there is a need to continuously evaluate and validate the efficacy of fortified foods on human population since with changing lifestyle patterns and eating habits, the diet of a region also gets modified dynamically. Meanwhile, this also expands the available options to fortify foods and at the same time arises the needs for regulatory changes to be made in order to introduce new fortified food products in the market. In addition to these, the clinical studies which are done to establish the efficacy of a particular fortified food also need to be designed appropriately with accurate sample size and population. Furthermore, the cost of fortification is associated with a lot of factors like the method of fortification, dosages and the nature of the food product. Therefore, there is a scope of further researches in optimising the food fortification processes.

* Author is in Tasty Bite Eatables reached at bhadraa.ria@gmail.com

food MARKETING & TECHNOLOGY

E-Marketing
with Food Marketing
and Technology



Various options
are available:

Emailer Marketing
Branded content
Banner on website

For more please write on foodmarketing5050@gmail.com or call at 7827892179



Yeasts in Foods

A Source of Immunity Enhancer

■ By Dr. Parul Thapar*

INTRODUCTION

Yeasts can be consumed mainly in two forms- active and dead. Depending upon the form to be utilized, the active form is further available in dried (powder), compressed and liquid form. The active form of the yeast carries out the process of fermentation in various foods and also leavening during baking. The dead form of the yeast are the dead yeast cells that does not have fermenting activity and is only available in dried (flakes) form (Figure 1). The different features of the active and dead forms of the yeasts are shown in the Table 1.

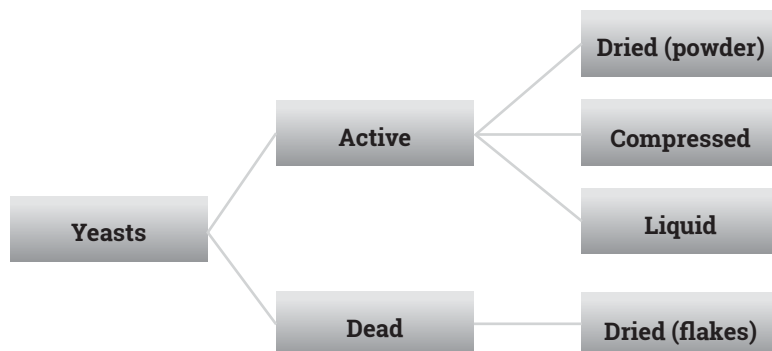


Fig. 1. Forms of yeasts to be consumed

NOW
**NATURAL
FLAVOURS
NATURAL
FOOD COLOURS &
NATURAL
INGREDIENTS**



NATURALLY
YOURS



sonarome
India's No.1 flavour company

Sonarome Private Limited
One Sonarome Way
KIADB Industrial Area,
Doddaballapur
Bangalore 561 203 INDIA

T +91 80 3090 2200
+91 80 3090 2288
F +91 80 3090 2299
sonarome@sonarome.com
www.sonarome.com

Partners
 **FRUTAROM**
FOUNDED 1993

An ISO 22000, GMP, Halal & Kosher Certified Company.

Your ingredient for success...!

THE DRIED FLAKES OF NUTRITIONAL BREWERS' YEAST HELPS IN THE STIMULATION OF B-CELLS AND NATURAL KILLER CELLS OF THE LYMPHATIC SYSTEM.

Table 1: Features of the active and dead forms of yeasts

Features	Forms of yeasts	
	Active form	Dead form (Flakes)
Purpose	Specifically used during fermentation of foods	Specifically used to improve food flavour and increase nutrition.
Commercially available as	<ul style="list-style-type: none"> • Baker's yeast (<i>Saccharomyces cerevisiae</i>); • Probiotics (<i>Torula</i> spp., <i>Saccharomyces kefir</i>, <i>Torulakumiss</i>); • Brewer's and wine yeasts (<i>Saccharomyces cerevisiae</i>, <i>Saccharomyces carlsbergensis</i>, <i>Saccharomyces vini</i>, <i>Saccharomyces sake</i>) 	<ul style="list-style-type: none"> • Nutritional Brewer's yeast (<i>Saccharomyces cerevisiae</i>); • Nutritional Whey yeasts (<i>Kluyveromyces slactis</i>, <i>Kluyveromyces marxianus</i>). <p>These also called modified nutritional yeast</p>
Food value	Rich in essential amino acid lysine which helps the body to absorb calcium, iron and zinc [4]. High in energy and minerals like phosphorus.	Rich in essential amino acid lysine which helps the body to absorb calcium, iron and zinc [4]. Excellent source of protein. Also rich in basic nutrients such as vitamin B, minerals like calcium, phosphorus, potassium, magnesium, copper, iron, zinc, manganese and chromium
Products	Bread/ Cake/ Biscuits; probiotic drinks like kumiss/ koumiss, kefir; beverages like beer, wine, rum; fermented whey drinks	Modified nutritional yeast flakes can be used to sprinkle over soups, roasted vegetables, salads or pasta.
Recommended intake (if consumed)	<ul style="list-style-type: none"> • Bread: 2 slices per day • Probiotic and fermented whey drinks: 60-100 ml per day • Red wine: 1-2 glasses per week • Rum, beer, vodka, ale: 1-2 units per week 	Nutritional yeast flakes: 1-2 table spoon per day

HEALTH BENEFITS OF CONSUMING YEAST BASED FOOD PRODUCTS:

In view of the prevailing pandemic (COVID-19) caused by SARS CoV2 virus and scope of future viral infections, the diet containing yeasts as ingredients can provide major health benefits. The drawback of SARS CoV2 virus and other viral infections is that after attacking the host, they become deadly for people with weaker immune system. Therefore, the yeast based food products can play a major role in boosting the immune system and overall health of human beings. These are mentioned below:

• Healthy Immune System:

Probiotic drinks - The probiotic drink like koumiss containing yeast provide natural defence system for the body. They prevent the growth of unwanted bacterial and viral species and strengthen the immune system from allergies. Yeast based probiotic drinks help the body to produce vitamins and minerals that act as antioxidants against infections.

Nutritional Brewer's yeast dried flakes - The dried flakes of nutritional brewers's yeast helps in stimulation of B-cells and natural killer cells of the lymphatic system. This increases the initiation of salivary immunoglobulins A (IgA antibodies). These antibodies act against certain viral antigens causing symptoms like cold (by *Rhino* virus, *corona* virus) and flu (by *influenza* virus); thus enhancing the immune system.

EpiCor - EpiCor, a whole food fermentate is a nutritional brewer's yeast based product that has been formulated recently and is also available online. Besides stimulating the secretion of IgA antibodies, EpiCor also contains macronutrients like fatty acids such as oleic

Widest range of **ETHNIC INDIAN FLAVOURS & SEASONINGS**

**Sonarome offer
an exciting range of ethnic Indian flavours
(Kulfi, Ras Malai, Mawa, Kheer, Gajar Halwa, Namkee Lassi,
Gulab Jamun and many more)
and extensive range of spice seasonings.**




sonarome
India's No.1 flavour company

Sonarome Private Limited
One Sonarome Way
KIADB Industrial Area,
Doddaballapur
Bangalore 561 203 INDIA

T +91 80 3090 2200
+91 80 3090 2288
F +91 80 3090 2299
sonarome@sonarome.com
www.sonarome.com

Partners
 **FRUTAROM**
FOUNDED 1933

An ISO 22000, GMP, Halal & Kosher Certified Company.

Your ingredient for success...!



acid and variety of soluble and insoluble dietary fibres. It contains vitamin B3 (niacin) and minerals like phosphorus, phytosterols and phenolic compounds like resveratrol. Resveratrol is a natural antioxidant that has anti-cancer properties inhibiting all carcinogenic stages, anti-inflammatory properties as well as cardio and neuro protective.

Yeast based products- All yeast based products consist of essential amino acid-lysine. This amino acid is essential because the human body cannot synthesize it and one needs to take it from outside sources. The percentage of lysine is highest in yeast based products. This amino acid helps to produce antibodies which enhance the immune system. Lysine also helps the body to absorb minerals like calcium, iron and zinc, thus promoting the growth of collagen in bones; production of enzymes and hormones and also lowering of blood pressure in patients of hypertension.

- **Improvement of Diabetes mellitus-2 and Blood Pressure:**

Nutritional Brewer's yeast dried flakes – The nutritional brewer's yeast contains glucose tolerance factor (GTF). GTF structure is

composed of organic chromium (Cr+3) which is biologically active in association with amino acids-cysteine (cis), glutamine (glu), glycine (gly) and vitamin B3. GTF facilitates the binding of insulin to the target cells that reinforces the hypoglycemic activity of insulin and increasing the insulin functioning of maintaining blood-glucose level. This improves the glycemic index of patients of diabetes mellitus-2 and cardiovascular diseases. GTF contains macronutrients like potassium, magnesium, calcium and biological peptides containing lysine. The biological peptides along with these minerals reduces the activity of angiotensin converting enzyme (ACE) that converts the hormone angiotensin-I into an active form of angiotensin-II leading to hypertension. Due to reduced ACE activity, there will be reduced hypertension and hence improvement in blood pressure. GTF also reduces cholesterol and triglyceride levels (high density lipoproteins or HDL) in patients of diabetes mellitus-2, overall maintaining a normal blood pressure.

- **Improves Digestion:**

The probiotic drinks like kefir and koumiss containing yeasts support

healthy digestion by reducing constipation. They also improve lactose digestion (mainly for lactose-intolerant people).

CONCLUSION

There are diverse variety of organisms living on the earth. Among them, is the nature of the virus or any other pathogenic microbial species causing a particular infection, that they can change their strain every year causing a particular disease. This does not allow either the available vaccines to work or there can be delay in the development of new vaccines. Therefore, in order to avoid the havoc of any future infections or waiting for any kind of vaccine to develop, it is the right time is to make our immune system up to the level that can fight against any new pathogen. This can be done by bringing a change in the dietary habits. Due to the prevailing conditions of COVID-19 and considering other viral infections in future, the addition of yeasts in the diet will certainly enhance the immunity. The natural yeasts consist of numerous substances that are beneficial for human beings. Not only market available yeast based products can be consumed, but active dry or liquid form of yeast can also be used as ingredient in fermented foods like dosa batter, dhokla etc. in recommended dosage. While using the yeast based products, only the recommended quantity should be kept in mind, as excess of yeast intake can also cause side-effects like yeast allergy. Yeast intake should be avoided by patients of organ transplant and pregnant women.

* Author is an Assistant Professor at CT University and can be reached at parulthaparparul.thapar@gmail.com



COLORS FARMED WITH PASSION

Natural Food Colours

Dairy, Confectionary, Savory, Fruit Juices, Ice-Creams,
Cake decorations, Pharma syrups, Fruit Specialties, Bakery,
Seasonings, Sorbets, Biscuit Creams, Desserts, Jams,
Frozen Desserts, Snacks, Jelly Crystals, Alcoholic and
nonalcoholic beverages, Soups and Sauces, Soft Drinks,
Cereals.



Sonarome Private Limited
One Sonarome Way
KIADB Industrial Area,
Doddaballapur
Bangalore 561 203 INDIA

T +91 80 3090 2200
+91 80 3090 2288
F +91 80 3090 2299
sonarome@sonarome.com
www.sonarome.com



An ISO 22000, GMP, Halal & Kosher Certified Company.

Your ingredient for success...!

New Reference of Skimmed Milk Powder Meets the Needs of the Condensed Milk Market

Lactalis Ingredients completes its offer of skimmed milk powder with a high heat-stable (HHHS) quality. This new reference is suitable for condensed milk producers looking for a skimmed milk powder heat-stable for their process.

THE CONDENSED MILK, A DYNAMIC MARKET DRIVEN BY THE MIDDLE EAST AND LATIN AMERICA

Consumption of evaporated milk and sweetened condensed milk continues to grow and is expected to register an average annual growth of 2% from 2019 to 2024. This growth comes from Latin America, the Middle East, and to a lesser extent from Asia. Using fresh local milk to produce dairy products in these areas is not always easy, because of the low milk collection. That is why some producers have to use milk powders as a substitute for liquid milk.

SKIMMED MILK POWDER HHHS, A SPECIFIC QUALITY ADAPTED TO THE PRODUCTION OF CONDENSED MILK

Lactalis Ingredients launches a new reference of skimmed milk powder in its plant of Ravensburg, Germany. This skimmed milk powder, called HHHS, is suitable for the production of evaporated and sweetened condensed milk, as it is stable at in-can sterilization temperature. The powder is made by drying fresh pasteurised skimmed milk, which undergoes a specific



heat treatment. The goal of this heat treatment is to denature the protein to obtain a heat-stable powder and prevent the coagulation of the protein during the production of condensed milk.

LACTALIS INGREDIENTS SKIMMED MILK POWDER HHHS FEATURES

Suitable for evaporated and sweetened condensed milk:

- heat-stable at in-can sterilization temperature
- low thermophilic spores
- good solubility
- preserved dairy taste



HYGRO
TECH ENGINEERS
An ISO 9001:2015 CERTIFIED COMPANY



MOISTURE PROBLEM..?? THINK HYGROTECH...!!!



Desiccant Dehumidifier

Hygro Technology Arrives to treat Moisture problems for many applications including but not limited to Food processing, Cold Storages, Seed Industries Pharmaceutical, Biotech, Lithium Battery Manufacturing, Civil ,R&D, , Engineering, Automotive, Defence, Wood drying etc..

HYGRO PROVIDES SOLUTION FOR:

- Condensation Prevention
- Mold/ Fungus Prevention
- Moisture Regain Prevention
- Corrosion Prevention
- Product Drying



Compact Desiccant Dehumidifier

HYGRO PRODUCTS TO TREAT MOISTURE PROBLEMS

- Desiccant Dehumidifiers
- Dry Rooms
- Lithium Battery Dry Rooms
- Product Drying Chambers
- Seed Box Dryer
- Dehumidified Drying Chambers
- Gas Purification System
- Conveyor Dryers
- Industrial Ovens / Drying Ovens
- Walk-in Humidity Chambers
- Wood Drying Kilns
- Battery Plate Curing and Drying Chambers
- Online Drying Ovens

Applications



Product Drying chambers

Hygro Provides a Turnkey Humidity and Temperature control solutions in Food processing industries, Cold storages, Seed processing industries, Beverage industries etc...

Conveyor Drying Ovens



HygroTech Engineers

No. 51 & 52 Kachchat gate, Magadi Road, Behind Rajarajeshwari Kalyana Mandapa , Bangalore - 560091
E-mail: sales@hygrotechindia.com Mob: +91 9886144100 Website: www.hygrotechindia.com



Grain Processing – Seed to Food

■ By Prof. B. M. Devani, Prof. B. L. Jani and Dr. S. P. Cholera*

Food, one of the basic needs for human comprising of various categories like grains, fruits, vegetables, dairy products, is the important part of daily diet and supplies all the macro and micro nutrients for the growth and survival if taken in balanced way. Grains, commonly referred to as cereals (maize, wheat, millet, rice, millets), pulses (beans, peas, cowpeas), oilseeds (soybean, sunflower, linseed) are the edible seeds of specific grasses belonging to the Poaceae family with or without outer

layer while the grains like amaranth, buckwheat and quinoa are known as pseudo-cereal grains as they do not belong to the same family but nutritionally they are at par or superior to the grains.

GRAIN: A NUTRI-RICH TREASURE

Nature has designed the grains in a way that balance diet along with fruits and vegetables and supply the requisite nutrients to our body. Cereals are dominant in low cost energy source carbohydrates while pulses are predominant in protein

and oilseeds are cherished with lipids which are important macro nutrients of human diets.

WHAT IS THE GRAIN PROCESSING?

Processing of agricultural commodity expressly grains is an important practice for their further use as raw or ingredient. Grains undergo various post-harvest pre-treatments and processing steps to make them available for final consumption. The post-harvest processing of grains falls in different phases. In the primary processing

the grains are cleaned, graded, sorted, dehusked/dehulled, milled, and converted into edible form. The secondary processing uses the primary processed grains using various steps to convert it into value added edible food products.

Grains are naturally covered with cellulosic materials known as hull or husk which are non-edible fibers for human consumption. To make the grain edible and ready for the further processing, onset the grains are passed through various cleaners and graders with the aim of removing impurities and grading the grains into different quality fractions. The sound grains are dehusked for further processing through conventional or advanced mechanical methods. The grains are then dried to obtain optimum recommended moisture content and packed carefully in suitable packaging material for storage in warehouse/godowns until further use for consumption or processing. During the storage period, the suitable care has to be taken to protect the grains from external or environmental factors such as rodents, mice, moisture, temperature, etc. GrainPro Cocoon is one of the advanced solutions (made of flexible UV-resistant Polyvinyl chloride) to safely store the dry grains like agricultural commodities without need of chemicals. Also, the advanced techniques of grain storage involve use of silo having the capacities of around or more than 100 tones.

TRADITIONAL AND MODERN GRAIN HANDLING

Traditionally, the grains are stored in bags without proper cleaning and drying, and handled manually. The advancement in the technologies, benefits the handling and storage life of grains. The grains are now processed scientifically and stored either in godowns or in silo

and conveyed using conveying mechanism. The wide varieties of grain handling mechanisms are available namely bucket elevator, belt, auger or screw conveyor, pneumatic conveyor, etc. to convey the grains.

POST-HARVEST MANAGEMENT OF GRAINS

Post-harvest management of grains encompasses the usages of steps reducing post-harvest losses during handling, transportation, storage, turning the grains in to value added preserved products with modern scientific technology. Thermal, non-thermal, chemical and biological technologies, together with other technologies are used to increase the storage life of grains. General steps for processing of grains after harvesting, transportation and threshing includes drying, cleaning, storage, milling into various fractions and value addition in to different products.

DRYING

The grains are harvested at around 20-25% moisture content at which they are highly susceptible to fungal contamination and deterioration. For safe storage and increased shelf life it has to be dried to within the range of 13-15% moisture content. Storage temperature and grain moisture

content have strong influence on grain quality and shelflife. The conventional method of drying under sun is also in use at some corner which has disadvantages like time consuming, losses during drying, non-uniformity in drying, poor end quality, weather dependent, etc. The grains are dried before storage to retard microbial and pest growth in a continuous flow or batch drying process. Moisture can also be controlled at the storage silo through in-storage dryer or aeration drying. Different directions of air flows in relation to the grain are used in Continuous flow dryers like cross-flow (e.g. screen dryers), mixed-flow (e.g. rack dryers) and concurrent-flow /counter-flow (e.g. tower/column dryers) before storage. Bin drying is a process where the grains are dried while they are stored in silo which is known as in-storage or aeration drying.

All the methods of drying aim to maintain moisture content at desired level however they use specific control systems. Control of moisture content can be performed manually or automatically such as feed-forward controllers, later being expensive but accurate. In advanced grain drying system, commonly used sensors include thermocouples and resistance



thermometers (for controlling air temperature); infra-red pyrometers (for controlling product surface temperatures); and wet-bulb and dry-bulb thermometers, resistance sensors and absorption capacitive sensors (for de-humidifying the air).

MILLING

Milling is the process separating different pieces that makes up the grain. The grains are milled in two ways, i.e. dry milling and wet milling. Dry milling consisting of grinding and shifting is the oldest way of milling grains to obtain milled fractions of the grains. Wet milling of grains comprises of milling of soaked grain, followed by separation of starch, protein, fiber and oil. Corn, rice, wheat, and other grains are processed by dry milling and yield into important products

such as flour, grits, semolina, etc. depending up on particle size. First, the grains are cleaned using various types of cleaners or separators to remove impurities from it. The various cleaning machineries used are magnetic separator that removes ferrous metal particles, disc or sieve separator that removes impurities size based (i.e., straw), an aspirator to remove lighter impurities (i.e., dust), destoner that separates materials based on density difference (e.g., stones) but of the same size as the desired grain and also color sorters.

After cleaning, the grains are conditioned or tempered using controlled amount of water for achieving moistened kernel, to soften the inner endosperm and harden the outer bran to improve the gradual separation during milling

purifiers. Paddy is milled to obtain brown rice, white rice. The parboiled paddy is dehusked, polished, ground and white rice, rice bran etc. are obtained. The rice bran is important by-product of paddy milling process and source of good quality oil.

PACKAGING

Storage of grains take many forms, ranging from piles of unprotected grains on the floor, underground pits or containers, and piles of sacked grain, to storage bins of many sizes and shapes. Consumer packages for grain commonly consist of heat sealed pouches made from LDPE provides better moisture barrier supports required shelf lives for the grains. Bags, made from cotton twill or paper, have been used successfully since a long for consumer packs of flour. Kraft paper bags with an LDPE liner provide additional protection, thus, a longer shelf life.

CONCLUSION

Through primary processing, the sound grains are processed and milled to various fractions as per the consumers' requirements. As moisture content and temperature are the major factors affecting shelf lives of grains, causing lipid oxidation, growth of insects and deterioration, to avoid it, they must be stored at optimum storage conditions. Flours, dals, intermediates are the end products which will be utilized as base materials for daily diets and various processed food products for delicious dishes, bakery and confectionary items, and such food articles.

* The author is from Department of Processing and Food Engineering, College of Agricultural Engineering and Technology, Junagadh Agricultural University, Junagadh and can be reached at bdevani@jau.in

MOISTURE CONTENT AND TEMPERATURE ARE THE MAJOR FACTORS AFFECTING SHELF LIVES OF GRAINS, CAUSING LIPID OXIDATION, GROWTH OF INSECTS AND DETERIORATION, TO AVOID IT, THEY MUST BE STORED AT OPTIMUM STORAGE CONDITIONS.



and sieving efficiency. Generally, the soaking time and temperature of grain kernels can vary depending on the type of grain, the variety, and also the initial moisture level. Wheat is milled to separate endosperm from the bran and germ to obtain various products such as wheat flour, refined flour, semolina, bran, germs, etc. This process uses break rollers which break wheat kernel and remove the endosperm and germ from the pericarp. The break material consists of bran, sizings (the coarsest part of the endosperm), middlings (finer particles of endosperm that require further reduction to yield the flour), and break flour fractions by reduction rollers. Then different fractions are separated using plan shifters and

HPP Technology Increases the Shelf Life in Food and Beverages by four Times

Shelf life extending technology is more important than ever. The need to keep food fresh and safe is a headache for many companies around the world, because supply chain disruptions caused by COVID-19 are being very complex and expensive. Now, High-Pressure Processing (HPP) and Hiperbaric appear as the best solution.

The increasing consumers' demand on sustainable, safe and healthy products has compelled the food industry to look for natural and environmentally friendly processes that help to keep fresh food characteristics while providing food safety and extending shelf life. With the coronavirus pandemic, the relevance of these items have significantly increased and HPP has moved into the market as the answer to its needs.

HPP is a non-thermal preservation technology that applies, instantaneously and uniformly, high hydrostatic pressure with water at chilled or room temperature (4-25 °C / 40-75 °F) in packaged food and beverages, being Hiperbaric the global leader in design and manufacture of HPP units.

"Since its inception in 1999, Hiperbaric has designed, developed, produced and marketed its high-pressure processing units internationally. The company's intensive R&D, combined with an outstanding team of professionals, has prompted it to a leading position (more than 60% market share), with 300 machines installed worldwide", claims Alejandro Blanco, Sales Director of Hiperbaric.

Thanks to these continuous R&D efforts done by Hiperbaric, its HPP units add interesting advantages (versatile design, a wide range of industrial machines from 55 liters to 525 liters, labor saving and greater flexibility,...) that reduce time-outs, speed up processes, making them more reliable.

Since 2018 beverage industry has a specific unit designed by Hiperbaric to achieve the highest efficiency and profitability in high-pressure processing, called HPP in-Bulk technology. "This new technology allows processing a large volume of beverages in bulk (before bottling) and doing the process simpler, with fewer steps and higher productivity", says Alejandro.

WHICH FOOD & BEVERAGE SECTORS MOST BENEFIT FROM THIS PROCESS?

High-pressure technology is the safest bet for the industry and the reasons are clear:

- **FOOD SECURITY.** HPP guarantees food safety and brand protection thanks to the inactivation of pathogens and spoilage microorganisms. Furthermore, it is applied to the final already packaged product, which avoids any kind of recontamination.
- **EXTENDED SHELF LIFE.** High-pressure multiplies by 4 the shelf life of some products at refrigerated conditions, without adding preservatives.
- **PREMIUM QUALITY.** HPP preserves all the nutritional and organoleptic properties of the final product such as flavor, flavor and texture.



• **ENVIRONMENTAL SUSTAINABILITY.** As it does not generate effluents and water used to rise pressure can be reused in each cycle.

• **NEW PRODUCT DEVELOPMENT.** Almost every product can be processed through HPP, which allows a great adaptation to consumer current preferences.

HPP applies to a wide variety of products, from traditional sectors such as juices and beverages, avocado products (guacamole), meat (sliced deli meats, dry-cured products) or seafood to more trendy categories like ready-to-eat meals, plant-based dips (hummus), baby food or wet pet food.

"This technology has become particularly popular in the beverage industry and within this in premium juice segment, as it enables products to retain their freshly squeezed attributes," explains PhD Carole Tonello, Applications and Commercial Director of Hiperbaric. "Of course, other beverages such as vegetable soups, probiotic and fermented beverages or non-dairy milk also benefit from its advantages. There are very few products that cannot be processed by HPP", she clarifies.

Many companies are using HPP to develop safety and minimally processed products, noticeably fresher than if they would be processed with other technologies. Someone are doing this because they can give a new life to imperfect-looking food instead of reject. However, most of them are committed to this technology because they can reach distant markets, without the need to modify their recipes or use preservatives and technologies that could compromise their product Quality.

In this regard, many studies support that HPP is a suitable technology to increase the shelf life in food and beverages. For example:

• **Guacamole and avocado products.** Guacamole spoils within the first 5 days, even when it is stored at 5 °C (41 °F) by lactic acid bacteria, moulds and yeasts. At 600 MPa (87,000 psi) for 3 min, significant instantaneous reduction in microbial load in guacamole (pH 6.35) was achieved without any previous acidification (Jacobo-Velázquez and Hernández-Brenes, 2010). Levels of mesophilic aerobic and lactic acid bacteria, two of the spoilage indicators, remained constant, around 2 log cfu/g, during the first 40 days of storage at 4 °C (39.2 °F) in HPP guacamole. Moulds and yeasts were well controlled (<10 cfu/g) in HPP avocado puree and

guacamole (689 MPa / 100,000 psi; 5 min; pH 4.3) for 30 days of storage at 5, 15 and 25 °C (41, 59 and 77 °F, respectively) (Palou et al., 2000).

• **RTE Meals.**

Concerning the studies performed by Rovere et al. 2006, HPP helps the producer to reach more than 45 days shelf life for a typical Italian dish made of cooked rice and mushrooms, called risotto ai funghi (pH: 5.82 & Aw: 0.98) stored at 4 °C (39 °F). In day 45 after HPP (600 MPa; 87,000 psi; during 5 min) the total microflora count stays below 1 log cfu/g.

Besides, HPP has an impressive and completely different application for seafood. HPP technology provides a simple and efficient method for the removal of edible meat from shell and carapace, with yields close





PhD Carole Tonello, Applications and Commercial Director of Hiperbaric.

to 100%, avoiding the need to boil. This process maximizes the output and allows launching a new product with a higher benefit: ready-to-cook raw or frozen meat without shell and with the sensorial characteristics of the fresh product.

Carole Tonello adds, "We know this technology can be difficult to understand: how does HPP act on the product? What does it need? Can we use any packaging? Are there any HPP product as mine? How can we implement an HPP unit in my productive line? To answer these and other questions, Hiperbaric has an excellent technical staff and two pilot plants (Burgos and Miami) where our PhDs do validations and new product developments in collaboration with customers and contacts interested in HPP. In addition, we approach the HPP technology and applications to the public through monthly and free webinars. They want to know how HPP acts in their products and what it can provide them, and we always are happy to help".



What do you want to **create today?**



Across industries and applications, we design specialised solutions.

For 70 years our solutions set the standard for yield, efficiency, and safety across a wide range of industries. We process and package all types of nuts, including roasted, seasoned, coated, and glazed, with our turnkey systems.

Whatever your product needs, we can meet it with precision and passion.



www.heatandcontrol.com | info@heatandcontrol.com

Chennai: +91 44 4093 1100



Insights into Continuous Mixing

Continuous mixing is a core technology in the production of many food products. Insights into how continuous mixing can be optimized and the implications for food manufacturers have been revealed by Positron Emission Particle Tracking' (PEPT) techniques, as part of the UK's Project Chariot research into mixing fine powders, reports Eddie McGee, Managing Director, at solids handling equipment maker Ajax Equipment.

Ajax Equipment's Continuous Twin Screw Mixer technology was the primary mixing methodology used in Project Chariot. A twin screw continuous mixer comprises two rotating intermeshing screws enclosed within a profiled casing. The screw arrangement consists of a series of paddles adjusted to resemble a discontinuous helix, which mix and drive material axially as the shafts rotate. The mixer offers a great deal of flexibility in the degree of mixing through changes to the operating parameters such as speed loading as well as the screw design: ribbons and various custom profile paddles, and changes to paddle frictional characteristics and angles.

The way in which material moves through a twin-screw continuous mixer has been investigated by researchers using 'Positron Emission Particle Tracking' (PEPT). Radioactive tracers of a similar size and density to the powder particles were passed through the mixing system to chart the movement of particles. These were detected by radiation sensors in the final quarter of the length of the mixer (22 of the total 78 mixing paddles).

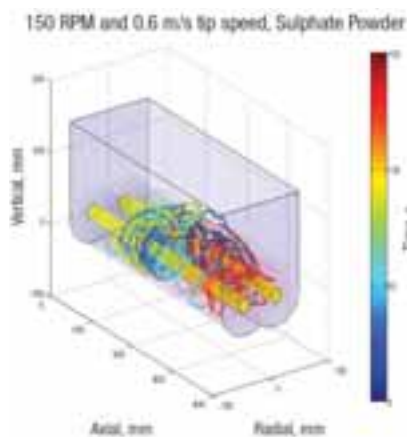
The trials consisted of mixing dry sulphate powder whilst two variables

(feed rate and screw rotation speed) were set at either high or low levels. The high/ low feed rates were operated at 450 kg/hr and 240 kg/hr respectively, and the high/ low screw

rotation speed at 150 and 72 RPM (or 0.6 and 0.3 m/s tip speed).

The radioactive particles were recycled through the system multiple times in order to achieve between 80-100 passes per experiment, in order to capture the various particle paths that may be taken during transit through the system. The PEPT technique has given an insight into the twin screw mixer's operation, showing how powder particles travel through the mixer during each of the 4 trials.

Figure 1 shows a three dimensional plot of one of the tracer particles within the high feed/ low screw speed regime (the color of the path changes with respect to time spent in the system). Through the analysis of hundreds of such particle paths, a complete qualitative description of how powder flows within the continuous mixer is as follows:



- Particle pathways for all regimes flowed mainly in an axial fashion. No backflow was observed.
- Particles stayed loosely bound to the motions of paddles on a particular shaft, usually as they flowed smoothly with the bulk. When struck by the paddle, the particles were lifted across the center of the z axis, and subsequently influenced by the other shaft's paddle motions.

A follow-up study was conducted proving these events happened often enough to ensure reordering of the bulk is achieved to achieve mixing to an excellent standard.

In addition, moving from shaft to shaft illustrates a far reaching radial effect which differentiates the twin screw from single screw mixing. For example, in food processing with both granular materials and liquors to combine, the twin screw provides both squashing and shear of the bulk which encourages good combining and dispersion of the ingredients.

- Particle motion became much slower at the walls of the mixer due to frictional forces.
- There is an even spread of particle journey lengths between a minimum and maximum time (the minimum and maximum time changed depending on the variable settings and powder used) but with no 'back mixing' the residence times remain consistent. Crucially, no two particle journeys were ever exactly the same.



- A certain fill level in the mixer is needed for particles to be lifted over the screw shafts by the paddles and encourage interchange between the two.
- The average residence time of the particles could be decreased by increasing either the powder feed rate or screw speed, or both. This indicated the axial flow became more efficient when there was more bulk solid for the paddles to push against; as well as also proving that high screw speeds push the bulk powder along more quickly.

As stated earlier, the system limitations (the size of the positron camera) meant that the working could only be observed for the last quarter of its axial length; the overall mixing quality for the continuous mixer should, in theory, be many times greater for the full length. Mixing was also observed to be effective even under lower loading conditions, indicating the machine may be operated at wide degrees of channel fill; without drastically affecting product quality overall.

The insights into continuous mixing offered by the PEPT tracking enables fine tuning of the mixer design to offer more customized systems, better suited to the material's mixing requirements.

For example, Ajax Equipment, has supplied leading European pre-fried and frozen potato product producer, Agristo, with two continuous mixers featuring an enhanced mirror

polish finish. The stainless steel Ajax machines are used to mix grated potato with various additives including flavorings to produce a range of potato products.

The Ajax twin screw mixers include profiled covers as part of a design ensuring there are no areas of the machines that are not

effectively swept by the screws and with the covers fully hinged and counterbalance for ease of lifting there are no areas that are awkward to clean. The casing's hygienic, crack and crevice free finish ensure the continuous mixers meet the strict hygiene standards for food manufacture. The mixers also feature Ajax's paddle screw geometry which provides efficient though gentle mixing with negligible damage to ingredients.

Acknowledgement: Sean Clifford, Researcher, School of Chemical Engineering and Advanced Materials, Newcastle University, Great Britain

The T 300 traysealer is particularly space-saving and economical. Thanks to its robust engineering, the MULTIVAC Hygienic Design™ and its optimum ease of operation, it is always the better solution. Highest Output, MAP Residual Oxygen level Consistency & MULTIVAC Quality Machine

MAP Packaging of Indian Sweets to achieve high shelf life without preservatives

www.in.multivac.com

Multivac
Sepp Haggenmüller SE & Co. KG
D-87767 Wolfertschwenden
Germany

MULTIVAC

MULTIVAC LARSEN India Pvt. Ltd.
Works : Plot No. 137, Sector 5, IMT Manesar, Gurgaon 122050
Phone : 0124-4610000 • info@multivac.co.in

European • Pure • Multiroll • Armroll • Rollers • Hybrid • Cleanroom • Collette

Drive Solutions for the Bakery Industry

With its lightweight, corrosion-resistant gear units, smooth surface motors, frequency inverters and motor starters in wash-down-optimised aluminum housings, NORD DRIVESYSTEMS is a powerful partner for hygiene-friendly drive systems in the bakery industry. Strong and robust drive solutions for mixing and agitation processes extend the drive technology specialist's portfolio.

Whether agitators, conveyor systems, weighing and filling plants or packaging machinery: NORD DRIVESYSTEMS offers efficient and hygienic drive solutions for the bakery industry that meet stringent requirements on hygiene, reliability and durability. The manufacturer's innovative inverter technology guarantees high positioning accuracy and reliable implementation of dynamic sequences. The drive units can be controlled individually, for example, to regulate kneading and conveyor speeds and to prevent blockages or control the dough process. Due to their modular structure, the drive units are also service-and maintenance-friendly.

CORROSION PROTECTION IN DEMANDING ENVIRONMENTS

The nsd tupH surface treatment provides an outstanding anti-corrosion treatment for gear units, smooth motors, frequency inverters and motor starters in wash-down-optimized cast aluminum housings. nsd tupH drive units are a robust and durable alternative to painted geared motors or stainless steel drive units. A respective treatment is available

for all NORD products made from aluminum. In nsd tupH aluminum drive units, all DIN and standard components, including drive shafts, are made from stainless steel. The fanless smooth motors do not spread germs and run very quietly.

STRONG DRIVE PACKAGES FOR MIXER APPLICATIONS

MAXXDRIVE® industrial gear units from NORD DRIVESYSTEMS ensure reliable operation in industries using mixing and agitation processes even under extreme conditions and offering high output torques up to 282 kNm, along with quiet running and long service life. The compact combination of MAXXDRIVE® industrial gear units, the new SAFOMI IEC adapter and an energy-efficient electric motor from NORD is the best choice for mixers and agitator applications to reduce the number of wearing parts and attached components.

The SAFOMI adapter combines the functions of a standard IEC adapter and an oil expansion tank in one single component. Its use on the agitator drive increases operational reliability and lowers maintenance



Bakery products, drives, mixers, nsd tupH, corrosion protection, drive solution, smooth motor, frequency inverter, industrial gear unit, SAFOMI adapter, bakery industry, baked goods production, surface treatment

efforts. Oil tanks and hoses as well as the radial shaft seal between gear unit and IEC cylinder are not required. The SAFOMI adapter is available for parallel gear units in sizes 7 to 11 (output torques from 25 to 75 kNm).

ROBUST EQUIPMENT OPTIONS

NORD DRIVESYSTEMS offers applicationspecific equipment options that combine high performance and efficiency, specifically designed for pumps, agitators and mixers with high process-related radial and axial bearing loads. This includes an agitator version (VL2 bearing) with large bearing spacing and reinforced bearing, as well as a Drywell version (VL3 bearing) with additional oil drip plate and leakage or oil sensor. For the VL2 and VL3 bearings, the bearing spacing is increased with attached components whereas the gear unit size remains unchanged. NORD also offers bearings that were intentionally oversized to meet the requirements of applications such as agitators in the bakery industry.

The nsd tupH surface treatment provides an outstanding anti-corrosion treatment for drive components in washdown-optimized cast aluminum housings



Different approaches to achieving greater recyclability and reduced consumption of packaging materials through pack design

The packaging industry is largely required to improve the recyclability of packs, to minimise the volume of material while providing the same product protection, and also to implement processes, which generate the smallest possible amount of packaging waste. To meet all these requirements, MULTIVAC offers a complete range of solutions, including the development of new materials as well as paper fibre-based packaging concepts.

USE OF PAPER FIBRE-BASED MATERIALS

With its PaperBoard packaging concept, MULTIVAC has developed a versatile, food-grade solution, which is not only recyclable and resource-saving but also underlines its sustainability credentials at the point of sale with its surface feel and appearance. These packaging materials comprise a backing layer made of cardboard and a functional layer of plastic, which provides the complete barrier function and product protection required for even highly sensitive food products like meat, sausage, and cheese. After they have been used, both materials can be separated by the consumer and fed to an existing recycling stream. The concept can be produced on thermoforming packaging machines or traysealers.

One variant of this is MULTIVAC PaperBoard Flat, where skin packs are produced from a flat cardboard backing. In contrast to traysealers, where a pre-cut cardboard backing is run, thermoforming packaging



machines can use material from a roll, which makes this technology far more flexible as regards the shape and design of the pack. PaperBoard Tray is also available for thermoforming packaging machines, as well as traysealers. If the material is to be run on traysealers, a plastic layer is present on the tray, whereas if the material is to be used on thermoforming packaging machines, uncoated cardboard trays are used, which are provided with the appropriate film in the sealing station of the packaging machine. With MULTIVAC PaperBoard Form there are formable paper fibre composites available, which can be used to produce MAP or skin packs.

Another important factor in saving resources is the efficient use of material in the packaging process, as well as reducing packaging

waste when producing the packs. MULTIVAC's packaging solutions offer a wide spectrum of different technologies.

Summary

There is even today a very wide range of solutions, which can contribute to reducing the resources required and the consumption of packaging material, as well as effectively supporting the introduction of a closed-loop system for food packs. But these concepts are only sustainable, if they actually meet the need and are viewed holistically as part of an overall strategy. All these packaging concepts and the materials used have to be examined for their effect on the product and its shelf life, as well as being subjected to end-of-life evaluation, i.e. the type of recycling appropriate for the packaging materials after the pack has been used.



Mr Arun Singhal shared the intense efforts being made by FSSAI to regulate and organise the Indian food industry.

The implementation of various schemes will serve and safe guard both the industry and consumers thus creating an element of trust and will encourage transparency in maintaining international standards for all players from roadside food vendors to 5-star establishments as well as industry manufacturers.

FSSAI under its current Head certainly means business... the proof of the pudding will undoubtedly be in the eating of it!



Being the new Head of FSSAI, please brief us about your priorities and vision for the food and beverage industry.

FSSAI is continuously evolving across the value chain from making standards to developing quality assurance and testing infrastructure; capacity building of human resources; strengthening our compliance and surveillance efforts; enabling support to FBOs and awareness generation to the public through the Eat Right India initiative. As we move forward, FSSAI will continue to ensure provision of safe food and healthy food to consumers. Various initiatives such as Eat Right Campus for people at workplaces, hospitals and higher education institutions; Eat Right School for school children and the Eat Right Toolkit to reach

people at the grass-roots level have been launched. Several benchmarking and certification schemes and cluster initiatives to improve the infrastructure and hygiene compliance levels in food establishments have been created that includes Clean Street Food Hubs, Hygiene Rating for restaurants etc. Food businesses are being encouraged to reformulate their products and gradually reduce their salt, sugar and fat content; several corporates have voluntarily signed a pledge on such reformulation. Fortification is being promoted by notification of standards for 5 staples, +F logo for easy identification by consumers. The focus is to scale-up these initiatives and increase the scope of activities under each of these.

FSSAI is working towards various regulatory reforms for enhancing efficiency with 'Ease of doing Business' including simplification in the processing of applications for licensing and registration and making it more user friendly for FBOs. IT-enabled resources are being deployed for improvement in existing portals of licensing & registration, portal of food imports and network of laboratories along with better e-Governance for delivery of various e-services including e-applications and e-inspections. FSSAI would also increase the scope of market surveillance to identify hot-spot areas of adulteration and conduct national-level surveys for milk, vegetable oils and other high risk commodities in future. Another core area involves improving the

infrastructure to facilitate better functioning across levels including strengthening of food testing laboratories; development of new National Food Laboratories (NFLs) at Chennai/Mumbai; investment in training and capacity building efforts for FSOs and field staff as well as food businesses for self-compliance.

What are the latest initiatives taken by the Government to improve the status of food safety for the people? Please elaborate on how you wish to engage with the industry?

To ensure food safety for people, it is critical to target and work with food businesses that supply food. To build capacities of food businesses on food safety, FSSAI has initiated Food Safety Training and Certification (FoSTaC) – a unique program to ensure a trained and certified Food Safety Supervisor (FSS) on each food business premise. Several benchmarking and certification schemes to improve food safety and hygiene standards are in place. Clean Street Food Hub, Clean and Fresh Fruit and Vegetable Markets, Eat Right Station and BHOG (Blissful Hygienic Offering to God) for Places of Worship that are targeted to clusters of vendors. The Hygiene Rating scheme for Restaurants and Catering Establishments, Sweet and Meat Shops has been put in place for individual food service establishments.

FSSAI is implementing a Central Sector Scheme for "Strengthening of Food Testing Ecosystem in the Country with a total outlay of Rs. 481.95 Cr that includes Rs 300 Cr for strengthening the network of laboratories across the country as well as provision of Mobile Food Testing Labs and other related equipments. Under this scheme,

FSSAI IS ALSO USING VARIOUS COMMUNICATION TOOLS TO DISSEMINATE NECESSARY INFORMATION REGARDING COVID-19 IN THE INTEREST OF PUBLIC. EXTENSIVE OUTREACH THROUGH SOCIAL MEDIA HANDLES OF FSSAI INCORPORATING KEY MESSAGES OF FOOD SAFETY, PERSONAL HYGIENE PRACTICES, HEALTHY EATING HABITS, SOCIAL DISTANCING AND OTHER VALUABLE TIPS FOR CITIZENS ENSURES REGULAR ENGAGEMENT WITH CITIZENS.

39 State Food Testing labs of 29 States/UTs and 10 referral labs have been taken up for upgradation with high end equipments to enable them testing of safety parameters viz. heavy metals, pesticides and antibiotics. Till date, 60 Mobile Food labs have been provided to 32 States/UTs for testing, training and awareness generation even in remote areas. During COVID-19 pandemic, a total of 179 online training programs have been conducted with ~ 37000 participants.

FSSAI is in process of strengthening its import clearance system by transforming the entire ecosystem to ensure efficient & effective import control, post clearance surveillance, robust monitoring infrastructure and simultaneously reducing the transaction time, cost & physical interface with importers. FSSAI is working to reduce the consignment clearance time at the port to facilitate the import trade as well as building capacities of customs officials and importers to ensure seamless import clearances. In the near future, new import offices at several locations like Kandla, Vishakhapatnam, Hyderabad, Krishnapatnam, Ahmedabad etc. will be started to facilitate the import trade.

What are the most important challenges due to a prolonged Covid 19 epidemic and the solutions you envisage?

In order to address concerns regarding the safety of food, FSSAI had constituted a committee of experts and clarified that there is no conclusive evidence for the food borne transmission of Corona virus and hence, dispelled myths regarding any food borne transmission. However, the CoVID-19 is posing a bigger challenge for the food supply chains worldwide due to a higher risk involved in human to human transmission for food handlers, workers, suppliers and distributors across the value chain. FSSAI is consistently making efforts to ensure un-interrupted food services/supply, facilitate food businesses, and addressing food safety concerns.

FSSAI has ensured that National Food Laboratories at NCR and Kolkata remain functional for uninterrupted import of food. e-Inspections for ensuring food safety during the lockdown period and extensive use

of digital technology has ensured FSSAI delivers services even in the lockdown. Various compliance requirements such as renewals of license/registration and returns have been deferred in view of the constraints faced by FBOs.

To train food businesses, FSSAI has initiated through its flagship FoSTaC program, an online training module for food handlers on the essentials of food safety and hygiene practices during COVID-19. Till date, ~62,000 people have been trained under this program. Further, a guidance note titled "Food Hygiene and Safety Guidelines for Food Businesses during Coronavirus Disease (COVID-19) Pandemic" has been released. This document covers best practices/ guidelines to be followed

social media handles of FSSAI incorporating key messages of food safety, personal hygiene practices, healthy eating habits, social distancing and other valuable tips for citizens ensures regular engagement with citizens. The Food Authority has collaborated with MyGov platform to disseminate key messages in the form of small videos with endorsement from various experts in the field of food safety and nutrition including doctors, nutritionists, dieticians, chefs as well as Sports personnel. A COVID-19 specific page on the FSSAI website is created that incorporates various communication collaterals, guidance notes and press releases along with important notifications, directions and orders released by FSSAI.

quet of initiatives that targets food businesses and consumers to make the right food choices.

Various initiatives such as Eat Right Campus for people at workplaces, hospitals and higher education institutions; Eat Right School for school children and the Eat Right Toolkit to reach people at the grass-roots level have been launched. Various IEC and awareness activities are launched such as "Aaj Se Thoda Kam" to reduce salt, fat and sugar in the diet as well as promotion of safe food habits. To empower consumers to check food adulteration, the DART Book, The Food Safety Magic Box and a mobile food testing van called Food Safety on Wheels have been created. Food fortification is also being promoted on a large scale to address micronutrient deficiencies. To encourage and support sustainable food production and consumption, FSSAI is spearheading initiatives such as Jaivik Bharat to identify authentic organic food, Save Food, Share Food to reduce food waste and promote food donation, Safe and Sustainable Packaging in F&B Sector to reduce the use of plastics and Repurpose Used Cooking Oil (RUCO) for safe & healthy use of cooking oil and repurposing used oil to make biodiesel.

FSSAI HAS WORKED ON NEW TESTING METHODS FOR DETECTING ADULTERATION IN HONEY AND RECENTLY INTRODUCED THAT AS PART OF THE COMPLIABLE STANDARDS. THE TWO PARAMETERS INTRODUCED IN THE HONEY STANDARDS HELP DETERMINE THE ADULTERATION OF HONEY WITH ANY OTHER SUGAR SYRUPS, ESPECIALLY RICE SYRUPS.

by food handlers to maintain high standards of personal hygiene, safe food practices, implementation of GHP and GMP practices as per Schedule 4 of FSS Act as well as ensuring necessary protocols of social distancing. An e-handbook on "Eat Right during COVID-19" for citizens has also been released which highlights safe food practices to be followed and simple tips on health and nutrition.

FSSAI is also using various communication tools to disseminate necessary information regarding COVID-19 in the interest of public. Extensive outreach through

Could you please elaborate some of the key initiatives and achievements of FSSAI?

The Eat Right India movement has been launched by FSSAI to protect the health of the people and the planet by transforming the food ecosystem of the country. It is based on three key themes- Eat Safe, Eat Healthy, and Eat Sustainable. It is inspired by the focus on preventive and promotive healthcare in the National Health Policy 2017 and flagship programmes like Ayushman Bharat and POSHAN Abhiyaan. It follows the Mahatma's footsteps in mobilizing the nation as a people's movement. It encompasses a bou-

FSSAI has recently launched an initiative of Food Safety Mitra to help FBOs with any queries related to licensing and registration of their businesses, hygiene rating audits and certification as well as training requirements. These professionally trained and certified Mitras by FSSAI shall assist FBO in their compliances on online portals of FSSAI. Since its launch last year, a very encouraging response has been received from the participants and as on date, more than 9142 participants have enrolled under the scheme.

FSSAI has worked on new testing methods for detecting adulteration in

Honey and recently introduced that as part of the compliable standards. The two parameters introduced in the honey standards help determine the adulteration of honey with any other sugar syrups, especially rice syrups. With this, ensuring quality of honey, apart from enforcement, is made more robust.

The Food Authority is planning to bring out a comprehensive regulatory document called "Food-'O'-copoeia", much like the Indian Pharma-Copoeia. The Food-'O'-copoeia would be a collection of food category-wise monographs that would be a single point reference for all applicable standards for a specific product category; and, will be specifying complete standards, labelling and claim requirements for that product category, specific packaging requirements, any other regulatory provisions that need to be met. This would also provide the list of methods that a laboratory has to follow while analysing the samples of the specific food/food product category. This would contain a total of 16 product category specific monographs and 1 monograph which would contain all the general requirements to be met by all the food product categories.

FSSAI is working on a regulation (which would be voluntary to begin with) specific to menu labelling that would mainly be covering food service establishments and/or FBOs. This regulation would empower the consumers with information on food they eat as food service establishments would declare quality (type of preparation, composition, nutritional including any allergens and energy) and quantity (amount, number, size etc) of the products per serving.

FSSAI has made quick progress towards the use of advanced

technologies for food testing since the year 2019. Several new rapid food testing devices/kits for detection of food-borne pathogens and toxins have been introduced. These devices ensure "faster, better, cheaper" real-time testing of food. FSSAI has so far, has approved 30 rapid food testing kits/devices under these regulations. There is a need to popularize these Rapid Tool kits to ensure they are widely used.

Could you please share some details on the Food Safety Compliance System?

FSSAI has recently launched its cloud based, upgraded new food safety compliance online platform called Food Safety Compliance System (FoSCoS, URL – <https://foscoss.fssai.gov.in>). It will replace the existing FLRS (URL – <https://foodlicensing.fssai.gov.in>). FoSCoS is conceptualized to provide one point stop for all engagement of an FBO with the department for any regulatory compliance transaction. FoSCoS has been integrated with FoSCoRIS mobile app and will soon integrate with present IT platforms of FSSAI such as INFOLNet, FoSTaC, FICS, FPVIS etc. Audit management system and other activities/modules will be enabled in phased manner in future. It has been launched and rolled out in 9 States/UTs viz. Tamil Nadu, Gujarat, Goa, Delhi, Odisha, Manipur, Chandigarh, Ladakh and Puducherry w.e.f 1st June 2020 and will be rolled out in the entire country in a gradual manner.

Your message for the Food Industry in the wake of current crises?

FSSAI, in the lockdown period, has ensured that it is available, in action and operational. It innovated to attend to challenges and dedicated

itself to its motto "Inspiring Trust, Assuring Safe and Nutritious Food". The Food Authority is consistently making efforts to ensure uninterrupted food services/supply as well as facilitate food businesses during the lockdown when the supply chains are adversely affected. On behalf of FSSAI, I acknowledge the contribution of silent workers in essential services, of which the major segment is that of our food businesses. My thanks and appreciation to the efforts of food industry, especially to their foot soldiers who are procuring, transporting, manufacturing, delivering and distributing the food, amidst difficult operating conditions.

As we progress forward, I expect the food industry to continue adopting necessary protocols for food safety, hygiene and sanitation practices at their premises while manufacturing food. I also expect businesses to nominate their staff and officers for the COVID-19 training as part of our FoSTaC program. The training content is based on the guidelines issued by FSSAI. Today, there is a need for businesses to come together and scale-up the COVID trainings with inclusion of their suppliers, distributors and retailers. Not only should they drive these capacity building efforts, but also help them by organizing such trainings covering their supply chains.

Last, but not the least, I sincerely expect food businesses to augment and support government's efforts in these tough times - starting with its workforce and their families, to the people near their areas of operation, to areas which are difficult within the Government reach, as part of their corporate social responsibility efforts.

PANDEMIC LOCKDOWN: Advantage Packaged Food Product Manufacturers

■ By P. Rajan Mathews*



"Pankaj Mahajan lives in Noida with his dietitian wife – Rohini and two teenaged children Rahul and Rashmi. Pankaj had the habit of buying household groceries in the beginning of every month along with his two children at the nearby Reliance Mart and Big Bazaar stores. Along with the regular detergents and soap, staples, pulses, cooking oil and spices, Pankaj and his two children buy the ready to eat Snacks such as biscuits, wafers, and extruded snacks for the late night snacking of his teenaged children. Pankaj also buys Dairy products such as ice-cream, cheese, butter and packs of milk shakes and lassi and Rashmi who is interested in making desserts buys cake mixes and her regular Maggie and Chings noodles along with hakka noodle packs and their seasonings. Pankaj and his son Rahul who do not have any culinary skills buy some of the new generation products such as ready to cook spice mixes, ready to cook breakfasts and meal products whenever they wanted to try their hand at cooking especially when their cook takes her leave each month.

Just prior to the pandemic lockdown started on 25th April 2020 Pankaj and his children carried out a last minute purchases to stock all their monthly food stocks and favorite ready to eat and cook products. This stocking has lasted them over the extended period and during this extended lockdown they did not have to go out buy any grocery and had to only buy their regular vegetables from Safal and non-veg from the nearby stores. During this Pandemic lockdown his son's birthday was well celebrated with his daughter making a chocolate cake

for the birthday and Pankaj prepared Hyderabad Dum Chicken Biryani from the Ready to cook spice mix. Pankaj's wife who considers herself as a good cook never accepted these ready to cook spice mixes but during the birthday celebrations she appreciated the Hyderabad Dum Chicken Biryani made by her husband. During this extended Pandemic Lockdown the family has relied more on the new generation of packaged foods as there was no domestic help and all household chores were being done by the house lady it was inevitable that Pankaj and his son had to lend their hand in cooking and cleaning. Thus the family has now become an ardent user of all the new generation food products are look forward for using more of these products after the pandemic lockdown."

During this Extended Pandemic Lockdown when all are to stay at home, one of the major essential is the Daily Food to be made with no Domestic help or Cooks coming regularly and also prepared food cannot be ordered from the nearby hotels / restaurants and eateries. The consequence of this being that the families and bachelors have to cook for themselves and the load on the house-lady gets more with children and all at home with no domestic help. Its more difficult for the bachelors and the less culinary skilled persons (more dependent on the outside food) to prepare food at home and hence they will have to rely more on the Ready to Cook food products, snacks, instant mixes and many processed foods including breakfast cereals and the next generation packaged food products which require less culinary skills. Usually these products are purchased for exigency demands from children or with unexpected guests coming home. If one were to

visit the stores today, the shelves of Snacks, ready to cook products such as instant noodles, instant breakfasts, instant meals and heat and eat meals, frozen RTE foods have all disappeared from the retail shelves. Even UHT Milk in Tetra packs which was never touched for the fresh milk have vanished as the consumer now want to use the long life UHT milk.



This will be the best appropriate period that the consumers could have tried and experienced the new age Ready to Cook products and formed a positive opinion which could have fuelled the transformation to these products in the future. Many households who buy such food products for the emergencies / exigencies have to live on these RTE products during the lockdown periods.

Even today when there's Corona Viral breakout the demand for poultry meat has dropped to dismal levels as a result the wholesale rates of poultry meat touched as low as Rs.40 per kg when the production cost of one kg poultry meat is above Rs.77 per kg. All poultry integrators, poultry processors and farmers have been losing money heavily and this is not a product which can be stored especially during the onset of the hot summer weather. The Poultry

Industry failed to travel the last mile and have left the development half way and have made themselves dependent on the Live Bird wholesalers who ensure the poultry majors do not get good prices for the Live Birds which is sold as a commodity. Poultry Industry should have gone the last leg in setting up poultry processing facilities and engaged in reaching processed poultry to the consumers and not Live Birds. Even the in the Fisheries Industry has not developed the last leg and the National Fisheries Development Board (NFDB) has not ensured that there's enough capacity for the processing of fisheries. In this context the efforts of National Dairy Development Board (NDDB) has to be lauded who not only worked on the increase in milk production but also simultaneously developed the processing facilities and the cold chain for the Dairy products.

Organizations whose product supply chain is affected due to the pandemic shutdown should look at alternate supply chains to reach the consumers. The organization who have already developed an E-commerce and a Distribution and Supply App for the retailers and consumers would be able to reap the benefits during such periods of pandemic lockdowns. Organizations who produce essential products such as milk, meat and other daily food products and organised grocery retailers need to justify their presence in the community by going out of their way to serve the community and these brands will be able to build loyalty even in post pandemic normal times.

Even during the lockdown period with most possible extension and /or gradual / partial lifting of the lockdown these Packaged Food Manufacturers have an opportunity to convert consumers and make

them regular buyers and users of their products by ensuring the following:

1. The movement of these products which are there in their supply chain pipeline to reach the retail outlets in both General Trade and Modern Trade.
2. Any stocks lying at their factories and regional warehouses need to be moved to their destinations on priority.
3. Production of these products at their factories ensuring with minimum of the labour are utilized and with social distancing.
4. Production of these packaged food products can be ensured to move across to reach the distributors and retailers.
5. Be prepared for the extension or partial lifting of the lockdown as there will a surge in demand due to the vacant shelves at the retail outlets. Brands that can reach their goods first will ensure their sales happen without much holding.





6. There will be a greater surge in demand from the households due to the following:
 - a. Households will want to store such products for the future. Even households that have never stocked such next generation packaged food will store them for any eventuality.
 - b. With the usage of these products and formation of positive opinions, household will like to continue usage of these packaged food and beverages regularly.
 - c. Products that have been served to children during this period will find a greater demand due to the children's persistence and pester power.

**FOOD PRODUCT CATEGORIES & PACKAGED F & B BRANDS THAT CAN
ADVANTAGE FROM THE PANDEMIC LOCKDOWN**

CATEGORY	PRODUCTS	MAJOR BRANDS
Ready to Cook Snacks	Instant noodles & Pasta	Maggi, Yippie, Chings, Top Ramen
	Indian Breakfast & Snacks	MTR, Mother's Recipe, Suhanaa, Safolla FITTYFIY
	Snack Mixes	Vegit / MTR Snack mixes.
	Plain & Savoury Oats	Quaker, Kellogs, Saffola, Bagry's
	Breakfast Cereals & Museli	Kellogs, Bagry's
Ready to Cook Meals	Indian Meals - Biryani, lemon rice etc	Mother's Recipe, MTR, Kohinoor
	International – noodles and pasta	Chings, Delmonte, Weikfield
Ready to Cook Culinary Ingredients	Spice Mixes for Indian Curries – Veg & Non-Veg	Mother's Recipe, Suhanaa, MTR, Eastern, Kohinoor
	Spice Mixes for S.E Asian Curries	Imported Brands
	Cooking Pastes– Ginger & Garlic, Green Chilies, Tamarind etc	Mother's Recipe, Hommade, Smith & Jones
	Tomato Puree	Hommade, EasyCook, Kissan
	Coconut Milk	Hommade, Maggi
Ready to Eat – Ambient Meals	Indian Meals and Curries in Retort packs	Kitchens of India, MTR, Mother's Recipe, Tasty Bites, Kohinoor, Priya, Gits
Ready to Eat – Ambient Dessert and Mixes	Indian Sweets and Desserts in Retort packs and Cans	Kitchens of India, MTR, Tasty Bites, Haldiram's, Priya, Gits
	Instant Indian Sweet mix and Desserts	Gits, Priya, Bambino, Vegit

Ready to Eat – Frozen Meals	Indian Meals and Curries in Frozen formats	Sumeru, Delicious, Godrej Yummiez, Suguna, Venkys, Buffet
Ready to Eat – Frozen Snacks	Veg Snacks in Frozen formats	McCains, Godrej Yummiez, Safal, Sumeru
	Non-Veg Snacks in Frozen formats	Venky's, Godrej Yummiez, Sumeru, Delicious, ROC, Suguna. IFB Agro Fresh Catch
Ambient Milk and Milk Products	Toned and Standardized UHT Milk in Tetra Packs	Amul, Mother Dairy, Nandini, Nestle, Britannia.
	Flavored Milk and Milk Shakes	Amul, Mother Dairy, Cavin's, Britannia, Hatsun, Parag
	Fermented Milk products – Lassi & Buttermilk	Amul, Mother Dairy. Britannia
Powdered Beverages	Fruit Beverage	Tang, Rasna
	Traditional Indian Beverages – Shikanji, Aam panna etc	Rasna, Jalani

* The Author can be reached at rajanmathews@gmail.com / prmathews@nextfoodbrands.com

FRUITS BEVERAGE DAIRY
BESPOKE
 TURNKEY SOLUTIONS



HRS brings end-to-end processing solutions for **Mega Food Parks, fruit, beverage, dairy, nutraceuticals** and a host of other segments. Globally, HRS is trusted for innovative range of heat exchangers and turnkey integrated systems for processing of **fruits, beverages, dices, pulpy juices, dairy products, nutraceuticals and ready-to-eat food**.

We specialise in **aseptic sterilisation & filling, evaporation, UHT, particulate food processing, pasteurisation, CIP** and such critical processes to ensure high quality, productivity, retained nutritive value and better shelf life of end product.

HRS Process Systems Limited

201 / 202, Karan Selene, 851, Bhandarkar Institute Road, Pune - 411 004

Tel: +91 020 66047894 & 95, 2566 3581 Fax: +91 20 2566 3583

Email: info@hrsasia.co.in

Website: www.hrsasia.co.in



Securely Packed with a Freshness Seal

- With the 752C, HERMA is presenting a flexible and efficient three-side or four-side labeler, ideally suited for the food industry.
- The wrap labeler 752C wraps the front, top and bottom and optionally the back of a packaging with a single label in one pass.
- With the integrated HERMA 500, absolutely precise dispensing is guaranteed – even with particularly challenging four-side labeling.

Food should be practical, good and healthy – the end-consumer is choosing fresh convenience food more and more frequently. The trend towards clamshell packaging for snacks, salads, sushi or pastries is therefore continuing. Labels play an important part in this: for identification, as well as for closing and sealing. For the specific requirements of the food industry in wrap labeling, the self-adhesive specialist HERMA

is presenting a versatile labeling machine. The 752C is designed to wrap a single label around the top, front, and bottom, as well as optionally the back of a packaging in one pass and thereby seal it. For three-side labeling, the label is dispensed at the front side of the product into the split conveyor belt and applied onto the top and bottom of the packaging as it passes through. In doing so, the label not only performs sealing and information functions, but also

contributes to the stability of the thin and consequently unstable plastic packaging. For four-side labeling, the label additionally wraps the back of the packaging. Due to the length of the sealing and identification labels, absolutely precise dispensing must be guaranteed – particularly with four-side labeling, so that no spiral misalignment occurs. “As the fresh snacks don't have any additional outer packaging, the perfect positioning of the labels plays an

Ideal for clamshell packaging of sushi, salads or pastries: The wrap labeler 752C wraps the bottom, front and bottom of a packaging in one pass – offering offers maximum flexibility. (Photograph: Shutterstock – qosphotodesign/HERMA)



important role", explains Ulrich Fischer, head of Product Management in the Labeling Machines Division of HERMA. "A precise and properly applied label indicates the high quality of the packaging contents." The wrap labeler 752C meets these requirements through the compact but robust design of all machine components.

HIGH PERFORMANCE FOR WRAP LABELING

The integrated HERMA 500 high performance label applicator enables the precise dispensing of even very long labels – for packaging with a length of up to 400 mm. And that even at high speeds: It processes up to 60 products per minute. The 752C is also efficient in other respects: with just a few work steps, it can be adjusted to other product sizes in a matter of minutes. Its compact design and completely food grade stainless steel construction as well as various installation options allow the 752C to be installed in virtually any production environment. Both the width of the side guides and transfer belts and the position of the label



Ideal for clamshell packaging of sushi, salads or pastries: The wrap labeler 752C wraps the bottom, front and bottom of a packaging in one pass – offering maximum flexibility. (Photograph: HERMA)

applicator can be easily adjusted. A thermal transfer printer can be easily integrated e.g. in order to print variable data such as batch number and expiry date. For the length of the conveyor belt, the customer can choose between different standard lengths, depending on his requirements. "Outstanding technology and a wide

range of useful options make the 752C probably the most productive, flexible and economical wrap labeler available", says Martin Kühl, head of the Labeling Machines Division of HERMA. "With the 752C, the food industry is well equipped for the increasing demand for self-service food."

Book Your Space in Print and Digital Magazine of Food Marketing and Technology

**20000+ people
are reading the
e-magazine now**



For more information please write on foodmarketing5050@gmail.com

First-of-its-kind Low-Energy Processing Line for Juice, Nectar and Still Drinks

Revolutionized process treats beverages in two separate streams using a combination of pasteurization, filtration and UV technology

Tetra Pak has recently launched a new, first-of-its-kind low-energy processing line for juice, nectar and still drinks (JNSD) to take beverage processing to a new level of efficiency. The new technology innovatively uses a unique combination of pasteurization, filtration and UV light technology to treat beverages in two separate streams, which are aseptically blended together into the final beverage.

Instead of pasteurizing the whole volume of the product, the new production line separates out water and pasteurizes only the concentrate. Water is treated separately with Filtration and UV Light which requires a lot less energy. In the new JNSD line, customers reduce energy consumption up to 67% and water consumption used for cleaning-in-place, sterilization and product change-over is cut up to 50%.

Maria Norlin, Subcategory Manager JNSD & Other Beverages at Tetra Pak said: "We realized that we needed to rethink JNSD processing and

find a more sustainable solution, that at the same time still provides a high level of food safety & quality assurance for our customers. The launch of our new low-energy JNSD processing line, 'Best Practice Line for JNSD with Aseptic Blending', illustrates how we are innovating with traditional processing methods in pursuit of more sustainable and efficient solutions. Our decision to split the existing JNSD line into two separate processing streams for treatment allows us to offer our customers processing options that can help them achieve their climate goals, and enables the industry to contribute towards global sustainability efforts."

"After many years of low growth, we see new opportunities for our customers on the horizon, as people increasingly search for ways to lead a healthier lifestyle, and this trend has accelerated during the spread of Covid-19. We hope this new production line can help customers capture the growth opportunities in a more cost-efficient way," added Norlin.

JUICE, NECTARS AND STILL DRINKS USING 50% LESS WATER AND NEARLY 70% LESS ENERGY. NO CATCH.

Society is changing rapidly, and not just because of the COVID-19 pandemic. Today's society has high expectations of how business behaves. In turn, companies that lead the way on key issues like sustainability, equality and fairness are gaining both respect and customers.

The global climate crisis is especially a focus of individual action – where consumers express their point of view by making clear and actionable everyday choices, such as when they decide what flavor and which type of juice to opt for as they wander the aisles of their supermarket. That's because now more than ever consumers are making choices that are bigger than just a shopping list for products and services. They want brands to operate in a way that is sustainable and which results in positive change. If a business does not offer that, it can lead – at best – to frustration with the brand and – at worst – to a complete parting of ways.

That's why innovation today has to deliver against two bottom lines: by delivering better profit margins and by helping to meet customer expectations that a business also protects our planet's resources.

For the Food & Beverage industry, it's these consumer expectations that make an innovation like Tetra Pak's



new low energy, juices, nectar and still drinks (JNSD) line an industry game changer. Through a radical new approach to production with sustainability at its core, Tetra Pak offers drinks producers a tool that helps them to meet key objectives: dramatically lower the operating costs of making an everyday grocery item like juice drinks, and meet expectations that a brand and its consumers can jointly contribute to a more sustainable world. The result is a boost in brand trust that's underpinned by a much more efficient operation.

Tetra Pak's new JNSD line is a first-of-its-kind for the industry. It completely reimagines how we process these products by looking at them through a sustainability lens. The result is a manufacturing line that is cheaper to operate and meets key sustainability objectives like decreasing water consumption by up to 50% and lowering energy consumption by up to 67%, depending on the production scenario.

Around the world, water is scarce. The F&B industry has repeatedly found itself in the spotlight for the amount of water that its production processes consume. Also, high energy usage is not only bad for the bottom line but also at odds with the fact that our world urgently needs to reduce its overall energy usage to contain the impact of climate change.

Across the whole supply chain of the drinks industry, the public demands

an increase in the sustainability of energy and water use across production, packing and transport. End consumers pay more and more attention to these sustainability metrics, and that is just as true in the increasingly competitive JNSD market, where squeezing every last drop of inefficiency from operations is what will set a producer apart.

It is often said that what is complicated is rarely useful and what is useful is rarely complicated, and in the case of the new JNSD technology from Tetra Pak the ingenious design is rooted in its simplicity. Taking an original, cutting edge approach to the processing concept, the new technology essentially strips out unnecessary wasteful elements and merges existing processing technologies into a streamlined, energy efficient processing line that combines filtration, UV treatment, Pasteurization and Aseptic Blending into one.

Traditionally, the processing of JNSD involves first blending the juice concentrate and water before pasteurizing the full volume of the beverage. Recognizing that this heat treatment is the most energy intensive step of the process, Tetra Pak transformed the traditional approach. The unique processing concept treats only the smallest possible volume of concentrate, rather than pasteurizing the beverage in its entirety.

The rest, which is water, is treated separately with cost-effective, lower energy technologies like filtration and UV light. Only at the end are the streams aseptically blended to produce the final product.



By splitting the JNSD production line into two separate streams, this innovative approach avoids working with unnecessarily large volumes, reduces the energy use during heat treatment, decreases product losses during changeovers and lowers the overall amount of energy, water and other resources used in Cleaning in Place and Sterilization in Place.

Distilling this down, the new technology enables manufacturers to increase their profitability and sales while minimizing the cost of energy and water. Most importantly, all this is achieved while sticking with the maximum food safety and quality standards that have always been at the core of Tetra Pak innovation. With such practical benefits, one of the greatest strengths of the technology could easily be overlooked: the ability to provide end consumers with environmentally friendly products that align to their values and secure a forward thinking F&B brands' position on grocery lists and in fridge doors globally.

In a world where there is an urgent need to protect our planet and meet consumer expectations for environmentally friendly options, sustainability cannot be a mere sweetener for the JNSD industry's mission to make great tasting, high-quality beverages. Investing in manufacturing technologies that are low in cost but big on sustainability signals that a brand stands for something and stands together with its consumers on these pressing issues.



Biodegradable Packaging in Food Industry

■ By Swati Solanki*

INTRODUCTION

The packaging that includes the use of biopolymers is Biodegradable packaging. Biopolymers are the molecules that are found in living organisms, like cellulose and proteins. Because of these characteristics they can be safely consumed, degrade quickly, and often be created from waste plant products. The aim of the paper is importance of raising awareness of people to live properly and responsibly, in harmony with nature, manage packaging and encourage the production of biodegradable packaging. In recent years biodegradable non-plastic packaging and films have begun to immerge as an alternative to standard plastic packaging.

The \$30.8 billion bioplastics market will grow at a compound annual growth rate of 14.8 percent from 2015 to 2020, according to reports.

Classification of Biodegradable Polymers:

Biodegradable polymers can be divided into three broad classifications:

1. Natural polymers
2. Synthetic polymers
3. Modified Natural polymers

These classes may be further subdivided:

1. Natural polymers or biopolymers
2. Synthetic polymers
 - (a) Carbon chain backbone
 - (b) Heteroatom chain backbones
3. Modified Natural polymers

- (a) Blends and grafts
- (b) Chemically modified
- (c) Oxidation
- (d) Esterification

Biodegradable polyesters in commercial development

PHA	polyhydroxyalkanoates
PHB	polyhydroxybutyrate
PHH	polyhydroxyhexanoate
PHV	polyhydroxyvalerate
PLA	polylactic acid
PCL	Polycaprolactone
PBS	polybutylene succinate
PBSA	polybutylene succinate adipate
AAC	Aliphatic-Aromatic copolyesters
PET	polyethylene terephthalate
PBAT	polybutylene adipate/terephthalate
PTMAT	polymethylene adipate/terephthalate
PGA	polyglycolic acid
PLLA	poly (L- lactic acid)

ADVANTAGES AND DISADVANTAGES OF BIODEGRADABLE PACKAGING

Advantages

1. Renewable
2. Good for the environment
3. Less energy to produce
4. Easier recycling
5. It is not toxic installations
6. Reduced dependence on oil
7. Reduced emissions CO₂

Disadvantages

1. The lack of arable land (future)
2. Compostability
3. A single bad properties
4. The awareness of people
5. Processing plants
6. Installation for the production
7. Short lived

CONCLUSION

Based on the above discussion, it can be concluded that biodegradable packaging has a successful future in the food industry. Various number of factors as for eg. policy and legislative changes, as well as world demand for food and energy resources, will undoubtedly influence the development of biodegradable packaging. There is no doubt that the production of and demand for this packaging more to increase partly because of improved properties of bio-degradable packaging and partly due to the decrease of its price, which is now unacceptable in relation to the price of other packaging materials. By increasing the awareness of people, training and, most large retail chains acting as the producers and the consumers can increase the growth and development biodegradable packaging. In order to solve this kind of packaging issue the food industry needs to more research. Food industry is one of the greatest packaging disposal producers and realising biodegradable packages for food stuffs is an important requirement of nowadays environmental problems.

* Authors is Copy Editor in LB Associates and can be reached at swatias10@gmail.com

A Webinar on Digital Packaging Creating Brand New Opportunities



■ By Swati Solanki*

Packaging Live organised a webinar on Wednesday, 24 June 2020, to discuss digital packaging creating brand new opportunities. There were several speakers including one moderator.

- **Nitin Nair**, Associate Vice President - Packaging Development, Godrej Consumer Products Ltd.
- **Yogesh Bambal**, Senior Group Leader - Packaging Chocolate AMEA Region, Mondelez International
- **Himanshu Maloo**, Director – Supply Chain, Johnson & Johnson, Pharma (Janseen) India
- **Sridhar Janardhana**, Head- Packaging (Domestic, International & Foods) Marico Limited
- **Achintya Lahiri**, National Head- Packaging Development and Engineering, Hindustan Coca-cola Beverages
- **Meenakshi Sapru**, Head Sales, Huhtamaki

- **Harveer Sahni**, Chairman, Weldon Celloplast
- **Appadurai**, Country Business Manager, HP Indigo Digital Press- India & Sri Lanka, HP India

The Moderator was Jayesh Pandey, Partner - Management Consulting, PwC India.

The major topics discussed included:

1. Brand Owner Perspective of the Digital Packaging format for their products?
2. Is digital a game changer in the Covid Era and there after?
3. Global Innovations in Digital Packaging Formats.

Weldon Celloplast, Chairman - Harveer Sahni, discussed the history of different digital technologies such as dry toner based, liquid toner based, water based inkjet, UV inkjet and others.

Huhtamaki – Global Packaging

Specialist – Head Sales, Meenakshi Sapru said that the packaging industry is a key component as consumers and other sectors adapt to the Covid outbreak. She mentioned that at Huhtamaki they touched approx 100+ brands that can be used in digital packaging; test marketing, a key factor for sustainable packaging with timelines playing an important part and e-commerce playing a major role. While summarizing her points, there was also a mention of supply chain efficiency, with a major focus on cash flows.

Mondelez International - Yogesh Bambal, Senior Group Leader, said that cost, agility and customization, are key enablers for brands. He highlighted the importance of this technology by which we can personalize packages to be used as gifts; and mentioned the Oreo Music Box.

Marico Limited, Sridhar Janardhana, Head-Packaging spoke of innovation design and sustainability as the three key factors to be kept in mind for digital printing; and drew attention to the option for 'Flexoprinting'.

Mr. Appadurai, Country Business Manager, HP Indigo Digital Press highlighted new technologies such as the next level of technology in fighting counterfeits. He also said that Digital printing eliminates many steps of printing process.

It was concluded that digital printing technology is the greenest printing technology today.

* Author is Copy Editor in Food Marketing and Technology Magazine



High Moisture Meat Analogue (HMMA) Through Xtrusion Cooking of Soy Proteins & Microalgae

■ By Rajkumar V Malik*

With increase in the growth of population the demand of food also increases. Increasing group of consumers are now demanding alternatives to Animal source of meat and plant source proteins can help us to develop a Mimicry Animal Meat Analogue product, tastes and flavors like Animal meat but is environmental friendly.

Moreover, increasing trend being towards saving lives of Animals over the world, HIGH MOISTURE MEAT ANALOGUE (HMMA) is a good substitute to meet the needs of Meat consumption while retaining the taste and feel of muscle meat products. HMMA tastes and feels like Animal muscle meat and can have equivalent nutritional value. Further advantages would be it

avoids disease transmittance from animal to consumer, saving animal lives, and economical reasons.

The Raw materials used are mainly soy proteins (SP) concentrate powder either singly or with microalgae or other plant, pea proteins, to keep 100% vegan friendly meeting their nutritional requirements, while non vegans too can have almost the same taste and feel of animal muscle meat, at low cost while saving several animal lives. Microalge (MA) is charatericised by dried Auxeochlorella protothecoides, form of cultivated algae which is sometimes used with SP to provide good feel of product. Defatted soy protein powder used along with

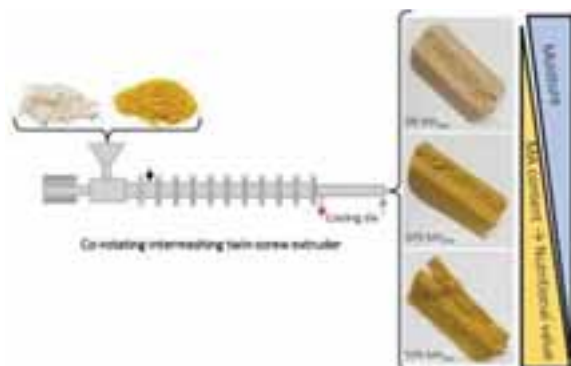


Fig. 1. Fibrillary structure in extrudates produced via Extrusion cooking with different proportions of MA: (a) 0% MADW – 65% moisture, (b) 30% MADW – 60% moisture, and (c) 50% MADW – 55% moisture. (d) Changes in color and texture of extrudates with increasing MA content and optimized moisture contents.

A CO-ROTATING TWIN SCREW EXTRUDER IS PREFERABLE TO PRODUCE HMMA AND IS MADE BY PROPER CONCENTRATIONS OF SP WITH PLANT PROTEINS OR WITH MA, WITH HIGH MOISTURE LEVELS.

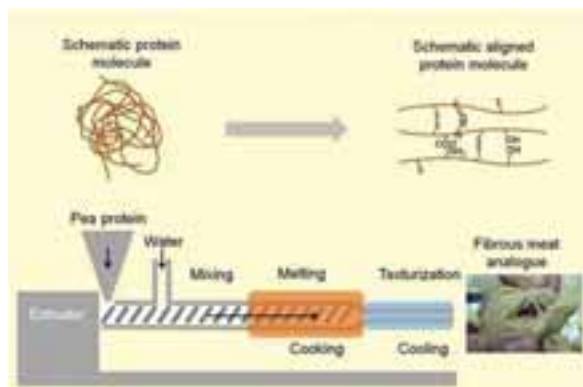


Fig 2. Single Screw Extrusion of HMMA



Fig.3. The Trial product emerging through the Slot Die

MA also provides good texture and elastic properties' to the extruded HMMA, almost resembling Muscle of Animal meat, While approved colorant could sometimes be added to provide almost Animal muscle colour.

HMMA with their high moisture content (typically >50% upto 70%) when made out of SP and MA have resemblance of Animal meat texture and taste, while costing less to produce.

PROCESS

Extrusion is the process used for producing HMMA. A Co-rotating Twin screw Extruder is preferable to produce HMMA and is made by proper concentrations of SP with plant proteins or with MA, with high moisture levels. However, the water preferably @ 70°C needs to be introduced online into the Extruder

just ahead of Feeding zone through accurate Dosing Piston pumps. Further 2 separate feeders are necessary, one each for SP and MA or other plant protein, because the degree of loading greatly affects the final texture and properties of HMMA. It is found, that, increasing levels of MA also influences the texturisation and elastic properties which needs to be compensated by reducing the moisture levels to maintain the required texture and strength of HMMA. Inside the Extruder, products are maintained from 20-170°C tempt gradient through various zones.

The TSE, due to its co-rotating action will knead, mix and further cook the ingredients by Thermo mechanical processing, heat being supplied by external heaters plus generation of adiabatic heat due to mechanical shear provided to raw materials. The Texturisation zone, or the Die (Slot

die) provides not only to shape the product, but also give characteristic texture to the product by cooling down and inducing texturisation by maintaining tempt to <100°C at exit. The flat product can be cut as sheet or into cubes, vacuum packed and stored at low temperatures.

Having said that, single screw cooling extruder has also been used with separate feeding, kneading, mixing, delivery sections with suitable die to achieve the result, though at less capital investment. With new screw designs and manufacturing, single screws can do good job at low initial investment.

CONCLUSION

Understanding of the High-moisture extrusion process is still limited.

Additional studies need to be conducted to develop understanding about the fiber formation. However, it is so far understood that we need to have an accurate extruder parameter for the production of meat analogues with a fibrous structure. Food industry should promote the meat analogues from a niche market to a sustainable and larger market in the future.



Single Screw Extruder for producing HMMA products



Laboratory Twin Screw Extruder for Research application

* Author is the CEO of Malik Engineers, Mumbai and can be reached at raj कुमार.malik2009@gmail.com; info@malikengg.com



X-RAY SYSTEM TARGETS SMALLER FOOD CONTAMINANTS



Mettler-Toledo's X34 provides improved detection sensitivity for error-free product inspection

Food manufacturers will be able to identify very small contaminants in a quicker and more reliable manner following the launch of a new X-ray system from the product inspection division of Mettler-Toledo.

The X34 X-ray inspection system provides detection of metal, glass, high-density plastic, mineral stone and calcified bone fragments across a wide range of packaged foods: eliminating costly product recalls and protecting brand reputations. The system also comes with advanced software that enables automated product set-up, dramatically decreasing the chance of human error and greatly reducing the number of false rejects. This makes for more efficient and profitable operations, while delivering excellent return on investment.

"Changing consumer expectations have resulted in an extraordinary choice of food and drink in a variety of cans, jars, bottles, cartons, and plastic containers," says Mike Pipe, product inspection specialist for Mettler-Toledo. "As food production

and packaging methods increase in complexity, the risk of contamination from foreign bodies such as metal and glass has increased. These contamination incidents can lead to expensive product recalls.

"The X34 provides a combination of technologies which enable producers to detect smaller contaminants reliably at high-throughputs, ensuring product safety and delivering brand protection."

The X34 is a single lane X-ray system designed for the inspection of a wide range of small and medium-sized packaged products. One of its key features is a 100W 'Optimum Power' generator, which automatically maximizes detection sensitivity. This is complemented by an advanced 0.4mm detector for the accurate detection of very small contaminants. These technologies ensure that power and contrast levels are optimized for every product, resulting in enhanced detection performance. This means the X34 does not always have to run at its full 100W output to achieve

MT10801 - Mettler-Toledo's new X34 provides improved detection sensitivity combined with the latest automation software for error-free product inspection

the best results, delivering power savings to the end user.

The high-performance software also allows for automated product set-up without the need for manual adjustment from the operator, leading to ultra-reliable product inspection. "Automated product set-up removes the possibility of operator error and makes the X34 easier to use," says Mike Pipe. "New products only need to be passed once through the system for the power to be optimized and the fully intuitive software requires minimal passes to automatically set the contamination inspection tools. This reduces operator training, increases production uptime and ensures product safety."

The X34 comes with Mettler-Toledo's advanced Contam Plus inspection software which further enhances detection capabilities, helping food manufacturers achieve a zero False Reject Rate (FRR). This is a crucial means of reducing product waste and ensuring product safety. By lowering FRR, manufacturers

can achieve higher production outputs without adding extra lines, boosting productivity and profitability. Subsequently, Total Cost of Ownership is reduced and Overall Equipment Effectiveness scores are increased.

In addition, the X34 can be equipped with the ProdX advanced data management tool, which maximizes production efficiency and quality control. The ProdX software can store images of foreign body contamination, which can be viewed remotely, in full support of connectivity, traceability and compliance. The system also features a highly-responsive capacitive touchscreen, allowing users to increase the viewing angle of stored images while maintaining image consistency.

The X34 also offers excellent ingress protection, with an IP65 rating as standard and IP69 available through upgrade. Cooling is enabled through an air conditioner, which allows the X34 to operate in high ambient temperature environments.

The launch of the X34 with its optimized detection and automated set-up compliments Mettler-Toledo's existing vertical X-ray range. Other systems include the compact, easy-to-use X33 for effective contamination detection with a low Total Cost of Ownership, and the highly configurable, advanced integrity inspection solution of the X36 for applications with multiple lanes.

"As food trends change over time, it's important that manufacturers choose product inspection equipment which is suited to the task at hand," adds Mike Pipe. "With the introduction of the X34, Mettler-Toledo offers food manufacturers and producers state-of-the-art, reliable contamination detection across a variety of applications."

All Mettler-Toledo X-ray generators come with a 5-year warranty when a standard or comprehensive service contract is purchased, offering full protection of the most valuable part of the machine.

For more information about the X34, click [here: http://www.mt.com/xray-packagedproducts](http://www.mt.com/xray-packagedproducts)

For more information about ensuring food safety through the prevention of physical contamination download Mettler-Toledo's latest white paper [here: www.mt.com/pi-contamination](http://www.mt.com/pi-contamination)

To get involved in the conversation about preventing contamination, achieving conformity, reducing waste and improving operational efficiency in the food manufacturing industry, join us at #MTinsidefood on Twitter or sign up to our blog at <http://www.mt-product-inspection.com/>

For more information about Mettler-Toledo Product Inspection's products and services for the food manufacturing industry follow us on Twitter (@MettlerToledoPI) or LinkedIn or visit www.mt.com/pi and YouTube.

About METTLER TOLEDO

METTLER TOLEDO is a leading global supplier of precision instruments and services. The company has strong leadership positions in a wide variety of market sectors and holds global number-one market positions in many of them. Specifically, METTLER TOLEDO is the largest provider of weighing and analytical instruments for use in laboratory and in-line measurement in demanding production processes of industrial and food retailing applications.

The Product Inspection Division of METTLER TOLEDO is a leader in the field of automated inspection technology. The Division incorporates the Safeline Metal Detection and X-ray Inspection, Garvens and Hi-Speed Checkweighing and the CI Vision and PCE Track & Trace brands. The solutions provided by the business increase process efficiency for manufacturers while supporting compliance with industry standards and regulations. Systems also deliver improved product quality which helps to protect the welfare of consumers and reputation of manufacturers.

For general information on Mettler-Toledo Product Inspection, visit: <http://www.mt.com/pi>



Siddharth Kachroo
Business Manager – Product
Inspection & Global Key Accounts
Mettler-Toledo India Pvt Ltd

For more Information
Write to us at sales.mtin@mt.com or
Contact Us Toll-Free 1800 228884 / 1800 1028460 or
Visit us at www.mt.com

IMPRESSUM FMT

Publishing Company

L.B. Associates (Pvt) Ltd

B-4/148C,

Safdarjung Enclave

New Delhi - 110029

Website: www.lbassociates.com

Publisher

Linda Brady Hawke

Marketing & Events

Bino Sahee

info@lbassociates.com

Neenu Choudhary

+91-8744069171

contact@lbassociates.com

info@fmtmagazine.in

Editor

Kanchi Batra

kbatra@lbassociates.com

fmeditorial@lbassociates.com

Copy Editor

Swati Solanki

fmeditorial@lbassociates.com

Legal Consultant

Roopa Somasundaran

Layout & Design

Atul Kumar

Subscription

sales@lbassociates.com

+91-7827892179

Parent Company

Dr. Harnisch Publications

P.O. Box 90328 Nuremberg, Germany

Email: food@harnisch.com

Website: www.harnisch.com/fmt

NOTE: Key numbers at the end of articles can be used as references for reader requests

DISCLAIMER: The views and opinions expressed in *Food Marketing & Technology, India* are solely those of the authors and do not necessarily reflect those of the editors or the publisher. Although all efforts have been made to ensure the complete accuracy of text, neither the editors nor the publisher can accept responsibility for consequences arising from errors or omissions or any opinions or advice given.

INDIAN EDITION

Issue 77112
Vol. 11 • Issue No. 7 • August 2020

food

MARKETING & TECHNOLOGY

इंडिया



No lumping
during
conveying

Masulins • Chemicals
and API Powders (Pharmas)

ALL YOU NEED IS MOISTURE-FREE AIR



Dry-Air

Dehumidifiers

Remove moisture effectively

Benefits of moisture-free air:

- No lumping, clogging or blockage of pneumatic systems
- Increased productivity
- Retain original quality and flavour
- Extend shelf life

DRY-AIR (INDIA) PVT. LTD.
Pary. Dry. Air. India • 2nd Floor • 2nd Main Road • 2nd Main Road
Bandra Kurla Complex • 400050 • Mumbai • India • Tel: +91 22 2554 1111 • Fax: +91 22 2554 1112
Email: info@dryairindia.com • Website: www.dryairindia.com

Leaders in Dehumidification Worldwide

National Events Calender

ANUTEC - INTERNATIONAL FOODTEC INDIA

26-28 November Mumbai

Looking for the perfect solution for your food safety inspection needs?



We understand that you need total confidence in your product inspection systems to maintain product quality and meet international food safety standards and local retailer codes of practice.

METTLER TOLEDO product inspection solutions can help you achieve:

- Brand protection
- Compliance
- Cost reduction
- Increased productivity



To find out more and to register for your Free White Paper **'Achieving Global Certification In Food Safety & Quality'** visit:
www.mt.com/in-cert-whitepaper

Write to us
at sales.mtin@mt.com or
Call Toll Free at 1800 22 8884 / 1800 10 28460
or visit us at www.mt.com



Checkweigher Washdown solutions



Metal Detection solutions



X34 - X-ray inspection solutions

METTLER TOLEDO

**We Cover Food Industry
Like No One Else**

New and Fresh Look



Call: +91-7505972946

For Advertisement contact contact@lbassociates.com, info@fmtmagazine.in

For Editorial contact fmtmagazine@lbassociates.com

www.fmtmagazine.in