Garden to Kitchen

Nutrient Rich Recipes from Home Garden Produce

सत्यमेव जयते

Science for Equity Empowerment and
Development (SEED) Division,
Department of Science & Technology, Govt. of India

Vigyan Prasar
An Autonomous Organisation of the
Department of Science & Technology, Govt. of India

Garden to Kitchen

Nutrient Rich Recipes from Home Garden Produce

Vigyan Prasar
An Autonomous Organisation of the
Department of Science & Technology, Govt. of India

Garden to Kitchen

Nutrient Rich Recipes from Home Garden Produce

Rekha Sinha
Head and Chief Scientist
Department of Home Science
Birsa Agricultural University, Ranchi

&

Kinkini Dasgupta Misra
Scientist F
Vigyan Prasar

Published By

Vigyan Prasar (An autonomous organization of the Department of Science & Technology, Government of India),
A 50, Institutional Area, Sector - 62, Noida - 201309, Uttar Pradesh, India
(Regd. Office: Technology Bhawan, New Delhi 110016)
Phones: 0120-2404430-35, Fax: 91-120-2404437
E-mail: info@vigyanprasar.gov.in
Website: https://www.vigyanprasar.gov.in

Conceptualization: Nakul Parashar, Director, Vigyan Prasar

Content Development: Rekha Sinha & Kinkini Dasgupta Misra

Technical Experts:

Rekha Sinha, Head and Chief Scientist, Department of Home Science, Birsa Agricultural University, Ranchi

B.K.Jha, Assistant Professor of Agricultural Extension, Birsa Agricultural University, Ranchi

Anjali Chandra, Assistant Professor, M.S.K.B. College, Muzaffarpur, Bihar

Brijesh Pandey, Krishi Vigyan Kendra, Mahoba, (Banda University of Agriculture & Technology), Belatal, Mahoba (U.P.)

Technical Contribution - Birsa Agricultural University, Ranchi

Editor: Kinkini Dasgupta Misra, Vigyan Prasar

Designer: Faneendra Kumar, Vigyan Prasar

Guidance: Indu Puri, Scientist E, SEED, DST

Coordination & Production: Vigyan Prasar

ISBN No: 978-87-7480-302-3

**Supported and Catalysed by Science for Equity Empowerment and Development (SEED) Division,
Department of Science & Technology, Govt. of India**

Preface

Inspite of green revolution and several National Nutrition Intervention Programmes, the prevalence of under nutrition, especially multiple micronutrient deficiencies continue to be of public health significance in India particularly in the states like Jharkhand, Bihar, West Bengal and Orissa where the population of tribals is very high. Among the micronutrient deficiencies, anaemia is most serious public health problem among children and women. Low access to micronutrient rich food is the main reason of micro-nutrient deficiency. India is passing through the phase of economic transition and while the problem of under nutrition continues to be major problem, prevalence of non-communicable diseases are becoming a very significant problem, especially in the rural & tribal areas. Fresh vegetables are store house of micro-nutrients and their sufficient daily consumption could help in the prevention of micronutrient malnutrition and certain chronic diseases such as cardio-vascular diseases and cataract. Vegetables are low cost nutritional supplements which can ameliorate this situation. Therefore, it is necessary to enhance the consumption of vegetables in diversified form in the daily diets of the people.

Fruits and vegetables start deteriorating after harvest and are available in abundance at low price at a particular time of season. Due to lack of basic infrastructures and technical knowhow, post harvest loss in fruits and vegetables is quite high. If these are appropriately processed, losses can be significantly reduced, which are important for a country like India, where per capita availability of protective food is very low. Through preservation techniques, surplus fruits and vegetables can be utilised properly and efficiently. Keeping this objective in view, this publication describing recipes for several preparations utilizing vegetables is being brought out. All these recipes are simple to prepare and do not require any special appliances. Separate chapter on preserved products of locally available fruits and vegetables has been included to enable housewives to utilize fruits and vegetables grown in their home garden or farm in an effective manner for achieving household food and nutritional security. This recipe book suits the requirements of the rural households and adapts regional Indian delicacies. Attempts have been made to widen the scope of inclusion of more portions of vegetable in daily diet. We hope rural tribal women & farmers, extension workers and others will find this information very useful for improving the nutritional quality of household diet in diversified manner.

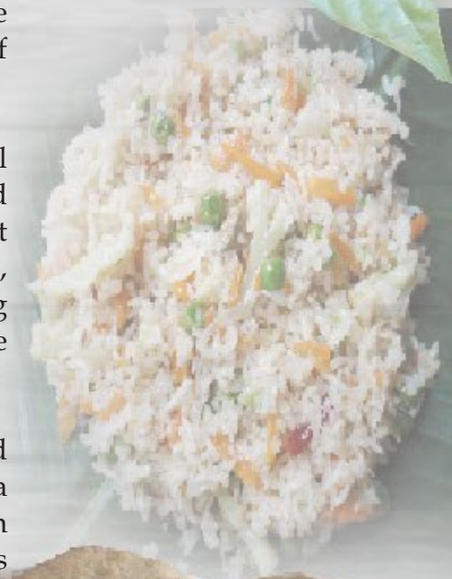
October 2019
New Delhi

Rekha Sinha
Kinkini Dasgupta Misra

Introduction

Vigyan Prasar, a national level organisation of Department of Science & Technology (DST), Government of India, engaged in science communication & popularisation, presents a recipe book 'Garden to Kitchen' to suit the requirements of the rural households. The initiative is aligned with the National Food Security Mission of Government of India and caters the need for incorporation of vegetables and fruits and daily dietary habits of the common people. In order to capture the huge knowledge resources lying scattered in various silos, it is deemed necessary to disseminate the information in a recipe book form regarding nutrient rich vegetables and fruits that can be grown in the gardens at the household level, along with their nutritional significance.

Vigyan Prasar implements the initiative of providing food as well as nutrition security to the tribal families through home gardening through a project supported and catalysed by Science for Equity, Empowerment & Development (SEED) Division of the Department of Science & Technology, Government of India. It has undertaken the project "Development of communication resources on applications of science & technologies for the home garden: Popularise locally adaptable practices for real-life gains." The recipe book has been prepared for the rural households in the tribal areas of State of Jharkhand.



The initiative aims to present an easy to use information resource on locally adaptable tools and techniques for rural households to enhance livelihood options. The objective of the initiative is to empower these women to diagnose and develop need-based preventive and remediation strategies for use in a timely manner. These contents are also significant for tribal areas of Bihar, West Bengal and Odisha. As part of this initiative, Vigyan Prasar has developed a Crop Calendar, a Compendium of vegetables and fruits, and the Recipe book to be used principally as training material. These training materials are to be utilised for providing training purpose to the agricultural extension workers, women workers in the grassroot level, Self Help Groups (SHGs), Krishi Vigyan Kendras (KVKs), and health care professionals.

Attaining food security is a matter of prime importance for India where more than one-third of its population is estimated to be poor, and as many as one-half of its children have suffered from malnourishment over the last three decades. India has a history of hunger and food insecurity in the past. After seven decades of independence, India is still suffering from the problem of food insecurity that has caused the death of people due to starvation. About 15.2% of the population is undernourished in India, 15% of children under five years are the prevalence of wasting (underweight as per height) and 38.8% of children under five years is the prevalence of stunting.

Food energy intake at the household level is now given prominence in assessing food security. It has become common practice to estimate the number of food-insecure households by comparing their calorie intake with required norms. Attaining food security is a matter of prime importance for India where more than one-third of its population is estimated to be poor, and as many as one-half of its children have suffered from malnourishment over the last three decades. Both the supply side and demand side factors have their roles in the present condition of food security and undernourishment in India. Food security is thus a multi-dimensional concept and extends beyond the product availability, and demand for food.

The problem of food security is addressed better if the production and consumption of localised crop suiting to geographical conditions are promoted. The challenge is providing food security for all, and localised self-sufficiency of localised production is the answer. Fresh vegetables are storehouses of micro-nutrient, and their sufficient daily consumption could help to prevent micronutrient malnutrition and certain chronic diseases. Vegetables have all potential of providing a low-cost nutritional supplement to ameliorate this situation and it is necessary to enhance the consumption of vegetables in a diversified form in the daily diets of the people.

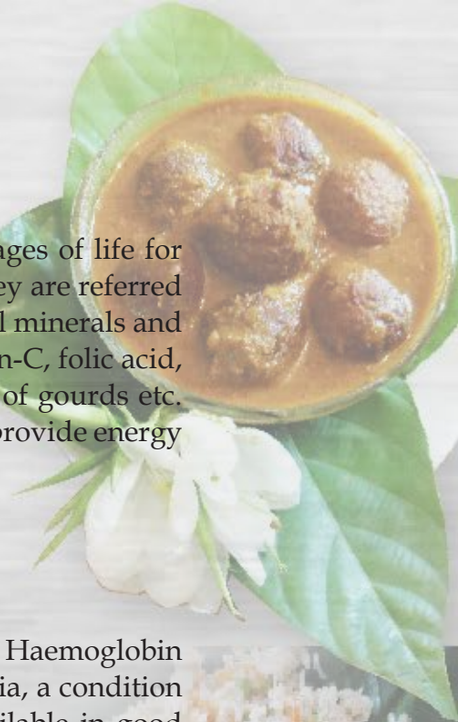
Green leafy vegetables (GLVs), other vegetables and fruits are easily available. Most vegetables, particularly GLVs, are inexpensive. These foods can be grown in the backyard as home garden with very little effort and cost. Even in lean seasons like summer, they can be grown using household wastewater. Home gardens can make an important contribution to food security as an additional food source or by supplying off-season production as well as an addition to the income of the tribal families giving a livelihood to the women of tribal areas of Jharkhand.

It is imperative to find ways to eat more servings of vegetables per day to get the maximum nutritional benefits from fruits and vegetables. Keeping this in view, this vegetable based recipe book has been prepared to enable the tribal women to include more servings of vegetables in their diet in diversified ways. These recipes are attractive, palatable, affordable and yet nutritious. Ingredients which are widely available and are within reach of rural households were selected to formulate nutritionally rich healthy recipes which are region and culture-specific. The book provides the amount of calories, protein, fat and minerals contents per serving of the recipe.

Women of tribal households have been actively engaged in economic activities. They have been participating in all the modes based on resource use in the long history of humankind; namely, the gathering (including shifting cultivation), settled cultivation and industry including construction and manufacturing. But the women have not been able in making control over material assets, intellectual resources and ideology as yet in spite of constitutional provisions about raising their status, enhancing their quality of life, malnutrition, bringing about gender equality and gender justice.

Kinkini Dasgupta Misra
Vigyan Prasar

Basics of Nutrition

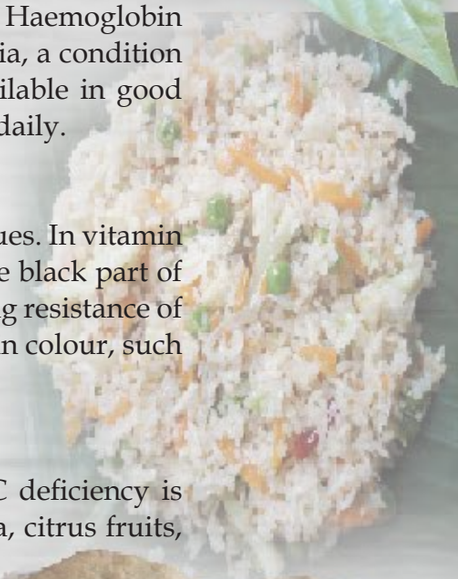


Nutrition is a basic human need and prerequisite to a healthy life. A balanced diet is essential from the very early stages of life for proper growth, development and to remain active. Vegetables are the most important component of a balanced diet. They are referred to as protective foods because green leafy vegetables, other vegetables and fresh seasonal fruits are the treasure of several minerals and vitamins and therefore provide protection from many diseases. They contain abundant amounts of iron, calcium, vitamin-C, folic acid, carotenoids and phytochemicals. Some vegetables like green leafy vegetables, radish, bottle gourd, cucumber, all type of gourds etc. provide low calories, whereas some others such as potato, sweet potato, tapioca and yam are rich in starch and therefore, provide energy in good amount. Hence, the vegetables can be used to increase or decrease calories in the diet.

What functions do these nutrients and special factors in vegetables perform in our body?

Iron

Iron is an essential element necessary for the formation of haemoglobin, the red pigment present in the red blood cells. Haemoglobin plays an important role in the transport of oxygen to the tissues. Reduction in haemoglobin in the blood leads to anaemia, a condition with symptoms like paleness, fatigue and increased susceptibility to infections. In green leafy vegetables, Iron is available in good quantities. But the absorption of iron is limited. To improve iron absorption, foods rich in Vitamin C must be consumed daily.



Vitamin A

This is a fat-soluble vitamin. It is necessary for clear vision in dim light, and for maintaining the integrity of epithelial tissues. In vitamin A deficiency, the white part of the eye (conjunctiva) loses its lustre and becomes dry. In severe vitamin A deficiency, the black part of the eye (cornea) gets necrosed, leading to irreversible blindness in young children. Vitamin A also has a role in maintaining resistance of the body to common infections. Carotenoids are plentiful in fruits and vegetables that are green or deep yellow/orange in colour, such as green leafy vegetables, carrots, tomatoes, sweet potatoes, papaya, and mango.

Vitamin C

Vitamin C is an essential nutrient required for healthy bones and teeth. It also promotes iron absorption. Vitamin C deficiency is characterised by weakness, bleeding gums and defective bone growth. Vitamin C is abundantly available in fresh amla, citrus fruits, guava, banana and certain vegetables such as tomatoes.

Folic acid

Folic acid is a haemopoietic vitamin essential for multiplication and maturation of red cells. Its deficiency leads to megaloblastic anaemia. Folic acid intake during pregnancy protects the foetus from developing certain congenital defects. It also promotes the birth weight of infants. Folic acid deficiency increases homocysteine levels in the blood, thereby increasing the risk of heart disease. Green leafy vegetables, legumes, nuts and liver are good sources of folates.

Non-nutritional factors in vegetables and fruits

Vegetables also provide certain non-nutritional factors of considerable health significance to the human body. Among these, dietary fibre, antioxidants and other bio-active constituents require special mention. These non-nutritional factors are required for delaying the ageing process and preventing the processes which lead to diseases such as cataract and cardiovascular diseases.

Dietary fibre

Dietary fibre delays the intestinal transit of the food consumed. Dietary fibre is important for proper bowel function and to reduce chronic constipation, diverticular diseases and haemorrhoids. The protective role of dietary fibre against various digestion related disorders has long been recognized.

Antioxidants

In the recent past, the roles of vegetables and fruits as sources of antioxidants have been receiving considerable attention. Antioxidants restrict the damage that reactive oxygen free radicals can cause to the cell and cellular components. They are of primary biological value in giving protection from certain diseases. Some of the diseases that have their origin in deleterious free radical reactions are atherosclerosis, inflammatory joint diseases, asthma, and diabetes. Raw and fresh vegetables like green leafy vegetables, carrots, fresh fruits including citrus and tomato are the source of antioxidants (free radical scavengers). The nutrients namely vitamin C and carotenoids that are present in these vegetables are also potent antioxidants.

How much should we consume?

The Expert Committee of the Indian Council of Medical Research (ICMR), considering the nutrient requirements, has recommended that every individual should consume at least 300 g of vegetables (green leafy vegetables: 50g; other vegetables: 200g; roots and tubers: 50g) daily. Besides, fresh seasonal fruits (100g) should be consumed regularly. Since the requirement of iron and folic acid are higher for pregnant women, they should consume 100g of leafy vegetables daily.

Which vegetables should be consumed?

We should consume locally available seasonal fresh vegetables. They have more micronutrients and are tasty. However, no single fruit or vegetable provides all the nutrients we need. It is important to include varieties of vegetables with different colours in the diet for vital health significance. Inclusion of commonly consumed leafy greens, tomatoes and other vegetables, apart from yellow, orange, red, deep red, purple coloured citrus fruits enrich the diets significantly.

How to prevent cooking losses?

Vitamins are lost during washing of cut vegetables and cooking of foodstuffs. However, proper methods of cooking can substantially reduce these losses. Nutrient losses occur when the vegetables are washed after cutting into pieces for cooking. Consumption of properly washed raw and fresh vegetables is always beneficial.

How do we get these foods?

Green leafy vegetables (GLVs), other vegetables and fruits are easily available. Most vegetables, particularly GLVs, are inexpensive. These foods can be grown in the backyard with very little effort and cost. Even in lean seasons like summer, they can be grown using household wastewater.

How to accommodate more servings of vegetables in a day?

To get the maximum nutritional benefits from fruits and vegetables, it is important to find ways to eat more servings of vegetables per day.

Keeping this in view, this vegetable based recipe book has been prepared to enable the housewives to include more servings of vegetables in their diet in diversified ways. These recipes are attractive, palatable, affordable and yet nutritious. Ingredients which are widely available and are within reach of rural households were selected to formulate nutritionally rich healthy recipes which are region and culture-specific. The book provides the amount of calories, protein, fat and minerals contents per serving of the recipe.

CONTENTS


Appetizers

Bread Pakora

Nutritive value per serving

Energy (Kcal)	**413**
Protein (g)	**9.25**
Fat (g)	**22.27**
Mineral (g)	**1.42**
Fibre (g)	**2.15**
Calcium (mg)	**96.88**
Iron (mg)	**2.39**
Carotene (µg)	**281.70**

Method

1. Boil, peel and mash potatoes.
2. Blanch chopped capsicum, beetroot, French bean and carrot.
3. Heat oil (1 dsp), add ginger, garlic paste, chopped chillies, coriander leaves and rest of the spices including salt.
4. Add potato, blanched vegetables, mix well and fry for a few minutes.
5. Divide the mixture into six equal portions.
6. Make a batter with Bengal gram flour with water.
7. Add curd, all spices including salt into the batter.
8. Trim the edges of the bread slices and cut each slice into two triangular pieces.
9. Put stuffs between two triangular pieces.
10. Dip stuffed bread slices one by one into the batter and fry them in hot oil till golden brown.
11. Serve with chutney.

Ingredients	Weight	Measure/No.
Bread	200 g	6 slices
Bengal gram flour	100 g	1 cup
Refined oil (absorbed)	50 ml	5 dsp
Curd	10 g	1 dsp
Green chilli paste	4 g	1 tsp
Coriander powder	2 g	1½ tsp
Ginger paste	2 g	½ tsp
Garlic paste	2 g	½ tsp
Red chilli powder	1 g	½ tsp
Garam masala	1 g	½ tsp
Water	100 ml	2/5 cup (appx.
Salt	to taste	to taste
For filling		
Potato	50 g	1 medium size
Capsicum	25 g	1 small size
Beet root	25 g	1 small size
French bean	25 g	5 piece
Carrot	25 g	1 small size
Mustard oil	10 ml	1 dsp
Green chilli	3 g	2 piece
Coriander leaves	2 g	Few
Ginger paste	2 g	½ tsp
Garlic paste	2 g	½ tsp
Chat masala	2 g	1½ tsp
Salt	to taste	to taste
Cooked preparation	540 g	6

Bread Pakora

Cabbage- Onion Pakora

Nutritive value per serving

Energy (Kcal)	**235**
Protein (g)	**6.59**
Fat (g)	**11.38**
Mineral (g)	**1.17**
Fibre (g)	**1.32**
Calcium (mg)	**49.77**
Iron (mg)	**2.28**
Carotene (µg)	**97.39**

Method

1. Chop vegetables.
2. Take cabbage and onion in a bowl.
3. Add flour, chopped green chilli, other ingredients except oil and mix together.
4. Divide into 8 portions.
5. Heat oil; deep-fry each portion till brown and crispy.
6. Serve with chutney.

Ingredients	Weight	Measure/No.
Cabbage	50 g	½ cup
Onion	25 g	1 small size
Gram flour	20 g	2 dsp
Rice flour	10 g	1 dsp
Oil (absorbed)	10 ml	1 dsp
Green chilli	3 g	2 piece
Ginger paste	2 g	½ tsp
Garlic paste	2 g	½ tsp
Cumin seed powder	0.50 g	¼ tsp
Carom seeds	0.50 g	¼ tsp
Red chilli powder	0.25 g	¼ tsp
Turmeric powder	0.25 g	¼ tsp
Salt	to taste	to taste
Cooked preparation	100 g	8

Cabbage- Onion Pakora

Vegetable Momo

Nutritive value per serving

Energy (Kcal)	**230**
Protein (g)	**5.37**
Fat (g)	**3.16**
Mineral (g)	**1.57**
Fibre (g)	**2.19**
Calcium (mg)	**100**
Iron (mg)	**1.76**
Carotene (µg)	**1241**

Method

1. Make dough by mixing flour, oil, salt and keep aside for half an hour.
2. Chop vegetables and blanch for 2-3 minutes except onion and green chilli.
3. Heat oil and fry chopped onion till light golden brown. Add green chilli, blanched vegetables, ginger and garlic paste. Stir- fry for 5 minutes with covered lid.
4. Divide cooked vegetable mixture into eight equal parts.
5. Divide dough into equal parts (8), roll like poori and place fried vegetables, bring edges together by giving a shape of momo.
6. Steam for 15 minutes.
7. For chutney, grind all ingredients together.
8. Serve hot with chutney

Ingredients	Weight	Measure/No.
Refined flour	80 g	½ cup
Cabbage	50 g	½ cup
Onion	50 g	1 medium size
Carrot	25 g	1 small size
Capsicum	25 g	1 small size
Coriander leaves	25 g	4 bunch
Tomato	25 g	1 small size
Rice flour	20 g	2 dsp
French beans	15 g	5 piece
Garlic paste	5 g	1 tsp
Ginger paste	5 g	1 tsp
Oil	5 ml	1 tsp
Green chilli	2 g	1 piece
Water	75 ml	¼ cup (approx.)
Chutney		
Garlic	5 g	10 cloves
Ginger	5 g	1 piece
Lemon juice	5 g	1 tsp
Mustard oil	2.5 ml	½ tsp
Red chilli	2 g	4 piece
Salt	to taste	to taste
Cooked preparation	276 g	8

Vegetable Momo

Vegetable Spring Rolls

Nutritive value per serving

Energy (Kcal)	**199**
Protein (g)	**4.43**
Fat (g)	**5.36**
Mineral (g)	**0.61**
Fibre (g)	**0.68**
Calcium (mg)	**33.20**
Iron (mg)	**1.57**
Carotene (µg)	**263**

Method

1. Chop vegetables.
2. Heat 1 tsp oil in a karahi and fry chopped onion till light brown. Add vegetables and sauté till done.
3. Add salt, black pepper and sauces. Remove from flame.
4. Mix refined flour, corn flour, salt, water and make a batter.
5. Heat a tawa, pour oil and sprinkle water.
6. Pour a spoonful of batter, spread and cook like dosa.
7. Spread cooked vegetables evenly, roll and cut it.
8. Deep fry and serve hot with chutney.

Ingredients	Weight	Measure/No.
Refined flour	50 g	1/3 cup
Onion	40 g	1 medium size
Tomato sauce	30 g	2 tbsp
French bean	25 g	6 piece
Rice flour	25 g	5 tsp
Carrot	25 g	1 small size
Capsicum	25 g	1 small size
Beet root	15 g	Half small size
Chilli sauce	10 g	1 dsp
Soy sauce	10 g	1 dsp
Refined oil	10 ml	1 dsp
Black pepper powder	0.25 g	¼ tsp
Water (as required)	90 g	2/3 cup (appx.)
Salt	to taste	to taste
Cooked preparation	250 g	6 piece