

#1

Improvements on the Modblock using lime from mollusk shells as an additive

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ABSTRACT

The cost of construction materials have been soaring. Researchers have looked for alternatives ingredients for cement, which is the principal component of such materials. Most notable and recent of these substitutes is lime. While most researchers have altered the components, a few have tried redesigning the hollow block, the most common construction material. One such research team came up with the modified Block (MODBLOCK), one with a double tongue and groove system that permits interlocking.

The group designed a new block (an outgrowth of the Modblock), and incorporated lime from mollusk shells to improve the water absorption capability and maintain its superior qualities in load –bearing and durability. Three types of mollusks were analyzed for their calcium oxide content, namely : oyster, mussel, and scallop shells. Oyster shells yielded the greatest amount of lime. This lime was then add to a redesigned modblock, the REVBLOCK (revised block), in proportions prescribed by past researchers. Two group, one of lime-treated blocks and the other of the 1:6 proportions of cement and sand, were tested for water absorption, impact resistance, and durability/strength through the axial compression test. Water absorption tests yielded an improvement in the new blocks over Modblock. The lime-treated blocks absorbed less water than the blocks of pure cement and sand, although the original Modblock fared worse than the CCHB in water absorption. As for impact-resistance, which was conducted in three different heights, the results that were statistically tested showed an improvement over the CCHB and no significant difference between the Revblock and the Modblock. Results for load-bearing yielded dramatic improvements for the experimental block. It turned out that the block made up of sand and cement following the new design surpassed load bearing standards.

#2

The feasibility of sarsaparilla (smilax leucophylla) roots as contraceptive

Katherine G dela Rosa, Renacel S Pablo, Raymond C Repito, Jeneth S Sabay

ABSTRACT

It was found out that the sarsaparilla roots (smilax leucophylla) contain hormones such as estrogen and progesterone which are the main

components of birth control pills. Since overpopulation is one of the main problems in the Philippines, an experiment was performed on mice (*Mus musculus*) to test whether root extracts are a possible contraceptives.

Sarsaparilla roots were gathered, dried, ground, and boiled into different concentrations before incorporation into the drinking water of the mice. Observations were made for 21 days. The weight of each female mouse was recorded before and at the end of the treatment period. Data on the occurrence of births was collected and analyzed using the Chi-square test. Results were significant at 5% level. Data on the change in weights of the mice was collected and analyzed using the T-test. Results were not significant at 5% level.

From these findings, a conclusion was made that *Smilax leucophylla* root extract is a feasible source of contraceptive.

#3

The acceptability of correction fluid made from chalkdust

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ABSTRACT

This research is aimed to produce a low-cost correction fluid out of chalkdust which would be comparable to commercially available ones. Little pieces of non-usable chalk were collected and ground in an analytical mill, then passed through an analytical sieve to come up with very fine particles which served as the pigment for the fluid. Two different binders were prepared- hydrolyzed starch solution and commercial white glue adhesive. The chalkdust was thus suspended in two different types of solutions. Ethanol was added to both types of solutions to enhance drying time and to act as a preservative for the starch-based binder. The best ratio for the 1g/2ml H₂O starch solution to water to ethyl alcohol and to chalkdust is 3 ml:5ml:5ml:6g. For the adhesive-based fluid, ratio of adhesive to water to chalkdust is best at 5g:7ml:8g. Only one aspect was evaluated in the survey (the solution's paper-like quality shown by its appropriate whiteness) which was observed within the Philippine science High School community. The results showed that the experimental correction fluid was comparable to the commercially available ones.

#4

Phytochemical screening of the flowers of *sesaniagrandiflora* (katurai)

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ABSTRACT

Phytochemical screening was done on *Sesbania grandiflora* or katurai leaves. Ethyl alcohol and hexane were used as solvents. Tests for the

phytochemicals alkaloids, saponins, cardenolides and bufadienolides, tannins and polyphenolic compounds, cyanogenic glycosides, flavonoids and anthraquinones were performed.

The hexane extract and the ethanol extract yielded identical results. Katurai flower were found to have saponins, tannins (condensed), anthraquinones and 20deoxysugars.

#5

The potential use of scombrototoxin from *Katsuwonus pelamis* (tulingan) as an antibacterial agent

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ABSTRACT

The research was conducted to test the effectivity of scombrototoxin extracted from *Katsuwonus pelamis* as a cheap source of antibacterial agent. The toxin from pounded fish tails' meat was extracted by the addition of 0.1M HCl and then by filtration. A bacterial suspension of the bacterium, *Escherichia coli* was prepared. An inoculum of the suspension was transferred to the Petri dish. Ten mL of the molten medium, nutrient agar, cooled to 45°C, was then poured into the Petri dish and the dish was greatly swirled to disperse evenly the inoculum. Filter paper discs were dipped in the extract, dried and placed on the top of the seeded agar. The same was done for the solvent, 0.1 M HCl. The plate was incubated at 37°C. Observations and measurement of the clearing zone indicative of the antibacterial activity of the extract, was done after 24 hours. Inhibition zones of the solvent and control were also measured. No inhibition on the bacterial growth was observed.

#6

The quantitative and qualitative determination of hydrogen production from *Rhodopseudomonas gelatinosa*

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ABSTRACT

The country faces a major problem regarding the rapid depletion of its fossil fuel resources. In view of this, alternative sources must be found. Hydrogen is used extensively in the production of ammonia, organic chemicals, methanol, hydrochloric acid, and is utilized in petroleum refining. It can also be used in combustion or in the production of electricity in fuel cells when combined with oxygen.

It was recently discovered that *Rhodospirillaceae*, a local strain of *Rhodopseudomonas gelatinosa*, produces hydrogen after ingestion of starch. Electricity, therefore, may be generated in a fuel cell using microbiologically produced hydrogen.

This research aimed to compare the amount of hydrogen produced by the strain using two methods. The first is methylene blue reduction. It is known that one mole of hydrogen has the ability to reduce one mole of methylene blue. The second method entails the use of gas chromatography, which also serves to verify the purity of the hydrogen gas produced.

Results of the methylene blue reduction indicated that no hydrogen was produced by the collected strain, probably due to contamination in earlier procedure. The gas chromatography test was not accomplished due to the temporary inavailability of the apparatus.

#7

The extraction and comparative study of essential oil from eucalyptus globulus and callistemon lanceolatus

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ABSTRACT

Callistemon lanceolatus (bottle-brush tree) belongs to the same taxonomical family-Myrtaceae – as Eucalyptus globulus.

Leaves from both trees were picked and subjected to extraction processes to obtain the volatile essential oils they contain. Results of the physical test show that the percentage yield and specific gravity of the two oils have no significant differences.

Each type of oil was then used as an ingredient in a mentholated preparation to determine their potential to afford relief to the sufferer's of the common cold.

Results of the qualitative and quantitative tests show that the oil of Callistemon lanceolatus has potential as an ingredient in the making of mentholated preparations and that it compares favorably in terms of oil yield and specific gravity.

#8

Phytochemical screening of Alleurites moluccana nut

Rumelo Vanales Amor, Kenneth Ramos de Leon, Arys Poynter Deloso, Paul Baylon Paranal

ABSTRACT

The Philippine is now facing a grave economic problem due to the rising inflation. In response to this inevitable problem, the group looked alternative sources of raw materials which can be useful in the production of some basic commodities. Through research, the A moluccana nut seemed to be a potential source of new raw materials.

A Phytochemical screening of this nut was conducted and it was found to contain 64% fats and oils, 2.6% proteins, cyanogenic and cardiac

glycosides and tannins. However, the test for saponins, alkaloids, and flavonoids showed a negative results.

#9

The determination of thermotropic liquid crystallinity in banana and pineapple peeling waxy extracts.

Mylene Anciro, Gerard Garcia, Jonathan Hernandez, Rhea Lansangan

ABSTRACT

The purpose of this study is to produce and isolate thermotropic liquid crystals from waxy substances present in banana and pineapple peelings.

A liquid crystal phase is attained by a substance when the molecules assume symmetry while concurrently being a liquid. A thermotropic liquid crystal is one that is determined through temperature changes or, in layman's terms, are liquid crystals only at certain temperature ranges.

The steps used to isolate the waxy substances are as follows: first, the peelings were scraped and then mixed thoroughly with CCl₄ using an ordinary oscillator. Sodium sulfate was added to remove the water that may have been present and was later removed the water that may have been present and was later removed through simple decantation. The CCl₄ was evaporated to shield a waxy substance. The substance was further purified through column chromatography. Thin-layer chromatography was performed to identify the waxy substance. After identification, an attempt at crystallizing the substance was made which proved to be a failure.

#10

Chrysanthemum indicum (Manzanilla) extract and its effects on *Blattella orientalis*

Leilani Andres, Jo-Ann Lopez, Judith Lumbao, Maria Dolores Riel

ABSTRACT

Knowing the pyrethrum insecticides which are derived from *Chrysanthemum cinerariifolium* and *Chrysanthemum coccineum* of Family Compositae, do not cause environmental problems, the group was encouraged to conduct a study of a local source, specifically Manzanilla which also belongs to the Family Compositae.

The Manzanilla leaves were dried, dissolved in ethyl alcohol, filtered, evaporated and dissolved in petroleum ether and again evaporated to produce the extract to be used in the preparation of various concentrations. Various concentrations were prepared by having 6 ml of acetone in each solution and adding different amounts the extract (0,3,6,9,12). A pure extract concentration (0 acetone) was also prepared and for comparison the group also used Raid, a commercially-produced insecticide.

There were tested on cockroaches kept in a wire cage. Two cockroaches were tested at a time using the different concentrations. The cockroaches all died, but at different rates.

From the results, it may be said that Manzanilla is a potential insecticidal element, but then preparations must be studied further to find ways of lessening production costs.

#11

The potential of okra (*Hibiscus esculentus*), Kamote leaves (*Ipomea batatas*), and ginger Rhizome (*Zingiber officinale*) Extracts as acid-base Indicators.

Luisito T Ang, Leo Emmanuel L Chavez, Edwin S Soriano, Allan M Tabilog

ABSTRACT

A study on the potential of using extracts from three easily accessible plants, okra (*hibiscus esculentus*), kamote leaves (*Ipomea batatas*), and ginger rhizomes (*zingiber officinale*) was made. Crude extracts were prepared from each plant sample. Ethanol was used as the solvent for the extracts. The pH of each extract was taken. They were tested in acidic and basic solutions to determine whether or not their initial colors would change. Three sets of thirteen solutions of different pH's were prepared, one for each extract. Then the extracts were stability of these extracts were also determined. Then the specific pH sensitive substance in the extracts were determined.

The results showed that the okra changed color from cloudy green to yellow at pH 6.8 to 7.15. The ginger was initially red-orange, but became cloudy in acidic solutions. pH range was 12 to 10. The kamote leaf extract changed form dark red-brown to very dark bluish-green at pH 10-12. The okra extract was found to be the best acid-base indicator among the three, because it showed the most obvious color change at the boundary of acidity and basicity.

#12

Production of and screening for Sb-ti-Ca-CuO based superconductors

Jeanette Angeles, Ilyn Bulatao, Christopher Lagman, Alvin Llantero, Rica Marie Navarro

ABSTRACT

This research aimed to produce a superconductor from antimony and oxides of titanium, calcium, and copper using a methodology based on those used by the national Institute of Physics and the Malaysian researchers on superconductors. Seventy nine samples of the system Sb: TiO₂:CaO:CuO

were prepared, each of mass 10 g. The molar proportions of the system varied from 1:1:1:1 to 3:3:3:2.

Each sample was sintered twice at 1253 K for 10 straight hours, grinding it after each baking. Then they were palletized under 70 kN force into circular discs of 2.54 cm in diameter. The discs were sintered at 773K. They were maintained at that temperature for 1 hour. Then the temperature was raised to 1253K. The samples were subjected to 20 straight hours of sintering at this temperature. After this, temperature was lowered to 1073K and was retained for 2 hours. The temperature was then allowed to drop by 100 K and maintained again for 2 hours. This process was repeated until temperature reached 673 K. From 673 K, the furnace was turned off and furnace cooling was employed.

The test for perfect diamagnetism at or above 77K [Meissner test] obtained negative results for all samples. Again, results were negative. X-ray diffraction analysis was done on one sample to observe the reactions and structure formed. The analysis showed the sample was multi-phased.

Negative results in the Meissner and magnetic susceptibility tests were due to the wrong crystal formation and failure to obtain the preferred product, as seen in the x-ray diffraction pattern.

#13

Chemical synthesis of cholesteric liquid crystals

Ria Adoracion A Apostol, Sersita Suzette Q Atienza, Julius Clemence R Hafalla, Myra Vita F Ocubillo, Harold L Soriaga

ABSTRACT

Liquid crystal refer to a distinct state of matter with a structural order intermediate between those of conventional liquids and solids. They have important applications in modern industry and biological technology such as liquid crystal display devices, temperature sensors and stress monitors. The aim of this research is to produce cholesteric esters that exhibit liquid crystalline properties by reacting coconut fatty acids with cholesterol.

Fatty acids were extracted from coconut oil using saponification, hydrolysis and physical separation. In preparation for their reaction with cholesterol, fatty acid samples were reacted with thionyl chloride under a reflux condenser and a water aspirator to produce acyl chlorides. These were then refluxed with cholesterol dissolved in aniline. These were then refluxed with cholesterol dissolved in aniline. The mixture were then mechanically stirred. The resulting products were purified and crystallized. Characterization test are needed to find out if the end products exhibit liquid crystalline properties. Some of these properties are melting point, clearing point refractive index.

#14

The production and consumption of *Pheretima asiatica* as a fish and meat protein substitute

Christopher Rommel Armena, Mikael Luis Jacob, Jujin Eymard Mondez, Rhea Kathleen Reyes

ABSTRACT

This study was conducted to evaluate the prospects of marketing earthworms in the Philippines as fish and meat protein substitute for human consumption. The nutritive value of earthworms has been established to be 674-70% crude protein; more than the 65 of fish meal, 45% of soybeans and 50% of bone meals. They multiply at a fast rate; doubling their number after 30 days and increasing at a geometric rate. The group started with one kilo breeder earthworms, *Pheretima asiatica*, and fed them with one kilo of organic waste every two days for 15 days. The worms weighed 1.6 kg, upon harvesting and were made into burgers. Three set-ups (recipes) were done: 75% worms – 25% beef, 100% worms and 100% beef; after which a taste-test was conducted. Using Friedman's test of Significance, there was a significant difference in the taste of the three burgers as well as in their appearance, texture, color, after taste, and acceptability; only in their smell that they did not have any significant difference from one another. But in spite of the results obtained, the response and enthusiasm of the respondents as well as their positive comments may be basis enough to infer that with the proper education, there is a market for earthworms as protein substitute in the Philippines.

#15

The effects of Mosquito coil (katol) smoke on the lungs of *Mus musculus*

Lorena Leila L Balacano, Avelino S Bautista, Joel Anthony S Erestain, Victor Emmanuel M Pangilinan.

ABSTRACT

Air pollution, as defined, is the introduction into the atmosphere of materials that will produce or contribute to an adverse effect on the health and well-being of man or interfere with his normal and reasonable activities or use of property. Man causes air pollution by pouring hundreds of millions of tons of gas and particulates into the atmosphere each year. Mosquito coil, when lighted, emits a smoke that contains chemicals that are considered dangerous to man's health. To understand what possible effects will exposure to this smoke have on mice (which can later on be compared to its possible effects on man), the group exposed mice to the mosquito coil smoke for a period of one month. One group was exposed daily, another was exposed weekly, and another group remained as the control (group of mice that weren't exposed to the mosquito coil smoke). The mice were then

histopathologically examined. It was found that compared to the control which had negative findings, the mice that were exposed daily developed intra alveolar hemorrhage, as well as compensatory emphysema. Meanwhile, the mice that were exposed to the smoke weekly had congested blood vessels accompanied by intra alveolar hemorrhage. It is therefore concluded that exposure to mosquito coil smoke proved to be harmful.

#16

Determination of the effectivity of rice hull, Polish and bran as treatment for Diabetes Mellitus on Mus musculus

Carmel Grace S Bandal, Talitha B Calinghug, Andrea Rutchl b Laylo, Jason Peter Guevara

ABSTRACT

The effectiveness of the washings of rice hull, polish and bran as treatment for diabetes mellitus was determined. Aqueous extracts of the rice hull, polish, and bran containing 0.075 ppm chromium, 0.075 ppm Zinc, and 0.21 ppm niacin were fed to the diabetic mice (*Mus musculus*) for 30 days. Previous studies have reported that these compounds aid in lowering blood glucose levels in diabetic animals. In this study, feeding the diabetic *Mus musculus* with the aqueous extract apparently reduced their blood glucose level significantly.

#17

The investigation of the effects of an LPC-Based soap on human skin

Glenn Rommel R Bernardo, Roy King J Lorete, Siegfried S Quemado, Paul Christian V Rivera

ABSTRACT

The group's objective is to find out whether protein concentrate (LPC) affects the skin either beneficially or harmfully. The group chose to extract the LPC *Leucaena leucocephala* (Ipil-ipil) because its leaf protein concentrate ranges from 25% to 60%.

The group then collected Ipil-ipil leaves which they macerated using a blender. The macerated leaves were then strained through cheesecloth and the residue discarded. The filtrate was then heated and strained through a FOREVAC pump. The residue was then collected and dried. The group then used the Biuret test to determine the presence of LPC, which yielded positive results.

For the saponification process, a mixture of water and KOH was added to coconut oil and LPC was added to this solution. However, after stirring for a few hours, the solution did not thicken, unlike the ordinary soap the group had made previously. The group therefore concluded that LPC-based soap cannot be produced because the LPC coagulated and did not mix with the

alkaline-coco solution. The group also noticed the presence of a strong foul smell due to the spoilage of LPC and rancidity of coco oil which grew worse as time went on. It is recommended that a strong fragrance to mask the foul odor and some kind of preservative to keep the LPC from deteriorating must be added.

#18

The effect of the Intramuscular Administration of Anesthetics on the learning ability of female albino mice (*Mus musculus*)

Resti Ma M Bautista, Rachel Cristina M Manalo, Margarita Olivia M Paulino

ABSTRACT

Eighteen mice of the Swiss-Webster strain were used to determine whether the intramuscular administration of anesthetics has an effect on the learning ability of female albino mice. The mice were divided into three groups: experimental, placebo, and control groups. The mice were made to run two different mazes prior to the actual experiment to facilitate learning and to determine their learning ability. In the actual experiment the six test mice were administered five units of ketamine, also known as 2-(o-chlorophenyl) -2-methylaminocyclohexanone hydrochloride, thrice in six days. The placebo group received five units of distilled water three times in the same period of time, while the control group did not receive any injections at all. The mice were run in different third maze to determine the effect of the injections on their ability to learn the maze.

Results show that the intramuscular administration of the anesthetic, ketamine, does have a significant adverse effect on the learning ability of the experimental group of female albino mice.

#19

Determination of the anti-microbial property of gumamela (*hibiscus rosa-sinensis*) flower extract

Florante Belardo, Gavino Rommel Cureg, Mark Anthony de Lusong, Jose Rey Guzman, Redmond Albert Urbino

ABSTRACT

This study investigated the anti-microbial property of the extract from the flower of gumamela (*hibiscus rosa-sinensis*).

This research project is divided into two parts: the production of the extract from the gumamela flower using the reflux apparatus and the microbiological assay using the filter paper disc diffusion method.

In the reflux extraction method, the cut, previously weighed flowers were placed in the apparatus. Using ethyl alcohol as solvent, the extract was

separated from the flowers. Then, the extracted was separated from the ethyl alcohol through a hot water bath.

In the second part of the experiment, sterilized filter paper disc which were dipped in the extract, were placed in the sterilized Petri dishes filled with agar were treated with the bacteria. It is in this part of the growth of bacteria was inhibited) were measured for different bacteria such as E coli, B subtilis, s faecalis, and S aureus. We found out that gumamela flower extract has an anti-microbial property. From the statistical analysis (ANOVA) we found out that there is a significant difference between the treatments in the growth of S aureus.

#20

The effects of prolonged soaking of paddy on the nutritive content of rice oryza sativa

Alfredo P Bocato III, Edgardo B Fabian, Roman C frago Jr, Allan C Popa, Jazz B Ramiro

ABSTRACT

Accidental soaking of paddy (palay), often caused by poor storage facilities and bad weather, result in crop damage caused by mycological and bacterial activity, grain respiration, and eventual germination of some portions of bulk grain, all triggered by excessive moisture. Dependence on solar drying worsens the problem. The study was therefore aimed at determining, if any, the effects of prolonged wetting of palay on the basic chemical composition of the rice kernel obtained from them. It compared rice obtained from paddy of various soaking periods (4 days and 8 days) with the rice from paddy that was immediately dried. No significant changes were observed in the mineral ash, crude fiber, and protein-carbohydrate contents of the rice of various soaking periods. Fat percentage (dry basis) was observed to increase as soaking is prolonged.

#21

The mechanism of a thermoacoustic engine

Ronaldo carpio, Pat Henrietta Chongco, Luis Joaquin Katigbak, Lia Marie Navarro, Jose Emmanuel Palo

ABSTRACT

Thermoacoustics is a relatively new branch of physics which relates sound to temperature.

Acoustic heat pumps apply the principles of thermoacoustics to transfer heat by means of changes in air pressure. An acoustic refrigerator is an example of these. The significance of such a unit is its ability to cool without using refrigerants, most of which are chloroflourocarbons (CFCs) which deplete the ozone layer.

This project was undertaken to demonstrate how a thermoacoustic engine works and the factors involved in its operation.

A 58.5 cm PVC pipe was closed at one end and a standing soundwave was set up using a commercial speaker and an amplifier. The waves were generated by a sinewave oscillator. Thermometers inserted in the pipe indicated the temperatures at various places along the length of the pipe. The soundwave resonated with the wavelength equal to the pipe's length causing minute changes in pressure at the ends and middle of the pipe, with accompanying temperature changes.

In theory, the temperature is lowered at the ends and is raised in the middle. In the experimental set-up, it was observed that the temperature at the speaker end tended to rise while that in the opposite end tended to decrease. The temperature at the middle of the pipe remained nearly the same as the initial temperature. These effects were brought about by the rising of heated air and the sinking of cooled air, and also by the heat generated by the speaker. The relatively minute temperature gradients were caused by heat exchange between air inside and out of the pipe, the small amount of power used in its operation, and the uncontrollable atmospheric conditions of the test environment.

#22

The extension of the shelf life of gabi by the production gabi chips

Ma Rodora Catalo, Bernadette Dalusong, Ma Bridget Donato, Percival Estacion

ABSTRACT

In the research entitled "The extension of the shelf life of Colocossia esculenta (gabi) by the Production of Gabi Chips", we tried various ways of preparing the gabi chips. The most successful way is by chopping the gabi chips. The most successful way is by chopping the gabi and adding the desire ingredients. We had four samples.

Samples A was the control, meaning there were no leaves added. Sample B contained 0.025 g of gabi leaves per 250 g of gabi. Sample C had 0.25 g and sample D had 0.1 g of leaves per 250 g of gabi. We added flour and sugar to all our samples in equal quantities. In terms of general acceptability, the following are the results.

Sample A – 6

Sample B – 5

Sample C – 8

Sample D – 8

In our rating, 10 is the highest.

#23

The Bioluminescent Fungi of the Mount Makiling Tropical Rainforest

Diane Catibog, Penelope de Yro, Rubi Mayor, Genalyn Polidario

ABSTRACT

Studies have already been made on some bioluminescent organisms like the firefly and some marine animals. However, little attention has been given to the bioluminescent fungi. This research aims to study and describe some bioluminescent fungi that it can be used as a source of pathogen-detectors in future gene-splicing experiments.

In this pursuit, some species of the said fungi were field-collected and cultured under laboratory conditions using Badcock's Medium. Studies on the form and morphology were done with the use of a Bausch and Lomb microscope with camera attachment.

Studies on the culture media reveal that these bioluminescent fungi are easily maintained in the lab in a comparatively cheap solid medium (see Appendix A) as long as the cool and damp conditions required are maintained.

#24

Food preservation using the oxygen –consuming properties of aerobic saprophytes

Arlene Celso, Rizza del Fierro, Desiree Guillen, Jacod Hermosilla

ABSTRACT

This research project aims to determine if the oxygen-consuming properties of aerobic saprophytes can be used in food preservation.

Four tests were conducted to determine the effectivity of a fungal growth thriving on gabi and banana stems in reducing the oxygen present in food container in order to prevent further decomposition reactions from spoiling the food.

The apparatus had two compartments, the food and the decomposition compartments. Dividing the two are gas exchange pipes which allowed the passage of gases (mainly oxygen from the food compartment). Various measures were taken to prevent the entrance of flies, ants, etc. that may damage the food. Also, the whole system was isolated from outside conditions so as to limit the supply of oxygen in the food compartment. Food was placed in the food compartment then checked for any fungal growth after five days.

The setup was not able to prevent the growth of the decomposers (in general), but was able to retard their growth and thus their decaying action on the food can still be slowed down. Qualitative analysis was used, and food in the food compartment was compared with the food stored in a separate,

ordinary covered container and found that the latter showed more advanced forms of decay (maggots, molds, etc.).

#25

The proximate analysis of the fruit of the bunga de jolo palm (*Adonidia merrillii*)

Jeffrey Chan, Rene Lopos, Hazel Navaja, Karen Celsa Valdez

ABSTRACT

Palms are very common plants in the Philippines. The Bunga de Jolo palm is one of these palms which is used for decorative purposes. Its fruit is sometimes substituted for betel nut for chewing but other than that, it has no important use.

In this research, a proximate analysis of the fruit of Bunga de Jolo palm was done using standard methods of determination and analysis. The study showed that the fruit contained 45.53% moisture, 0.793% (1.46% when dry) crude ash, 0.89% (1.63% when dry) protein, 1.333% (2.44% when dry) crude fat, 44.99% (82.59% when dry) crude fiber, and 6.467% (11.87 when dry) crude carbohydrates and other substances which were not analyzed.

Since the fruit has a high crude fiber content, it can be used as raw materials for industries like papermaking, fabrics and other cottage industries. It might also prove to be useful as medicine for intestinal disorders like constipation.

#26

Utilization of kariba weed (*Salvinia molesta*) as "Green Manure"

Melanie Anne B Cheng, Christopher M Chua, Mark G Delfin, Bootes P Esden, Rey Eric S Soriano.

ABSTRACT

The study aims to determine the feasibility of using a harmful water fern, kariba weed (*salvinia molesta*), as a substitute for high-cost commercial fertilizers.

Corn plants were grown in soil treated with three different amounts of fresh samples of kariba weed: 0.0 grams for group A; 10.0 grams for group B; and 20.0 grams for group C. The determination of moisture content and nitrogen content was also done.

The average growth rate of the plants for two weeks were also follows: 17.036 cm for group A; 18.778 cm for group B; and 15.128 cm for group C. The determined amount of nitrogen content was 0.14%. Moisture content was found to be 87.667%

Analysis of the results showed no significant difference among the means of the growth rates of the three treatments. However, there was a

significant difference between the means of the growth rates of group A and group B.

On the basis of the analysis, it is concluded that even though the kariba weed cannot be used as a good fertilizer, it can be used as a "compost" material.

#27

The feasibility of calcium oxide (CaO) from talaba shells as an additive in medical plasters

Giovanni Claveria, Napoleon Cruz, Pocholo Gomez, Jeffrey Venezuela, Roberto Yabut Jr

ABSTRACT

This research aims to extract calcium oxide (CaO) from talaba shells and use it as an additive in medical plasters. An optimum temperature was determined so as to ensure the purity of the CaO being produced.

It was obtained through gravimetric analysis that the talaba shells of *Ostrea virginica* contains 60.523% CaO by mass. The optimum temperature for the production of CaO was found to be between 900°C – 1000°C for 60 minutes.

The desirable characteristics to be tested were the hardness, expansion, setting time and water absorption of the samples. The samples were made from different ratios of CaO and plaster of paris. A constant volume of water was poured on each mixture and were mixed manually. They were then poured into molds and were allowed to set.

Results showed that the 80-20 mixture of CaO-Plaster proved to best in over-all evaluation.

We therefore concluded that CaO can be used as an additive to plaster of paris and thus improve the quality of the resulting plaster.

#28

The acceptability of certain agroindustrial wastes as supplement in culture media for algal SCP production

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ABSTRACT

The ability of three agro-industrial wastes namely --- coconut water, paring cake, peanut shells --- of being used as supplements in culture media were tested on algal cultures of *Gracilaria coronopifolia* and *Caulerpa lentillifera*. The control is composed of 100% nutrient medium. The peanut shells and the paring cake were ground then five grams of each were added to the control then filtered to make a total volume of 300 ml of culture medium. In another setup, the experimental medium was made up of 30%

coconut water and 70% nutrient medium. All media pH levels were adjusted to 8.5 before the inoculation of algae. The acceptability of the experimental media were compared to the control medium by the comparison of the fresh and dry weights and the gross protein contents of the two algae being considered. Statistical analyses showed that there is no significant difference among the various media, with the exception of coconut water-enriched medium (both sterilized and unsterilized) and sterilized paring cake medium. This implies that peanut shells and paring cake (sterile) are potential additives in culture medium for algal SCP production of *Gracilaria coronopifolia* and *caulerpa lentillifera*.

#29

Human placenta as a substitute for peptone and meat extract in a bacterial growth medium

Conchitina Comoda, Natalie Ann Saluta Lioanag, Jennifer Remoto, Victor Reyes, Maria Christina Torio

ABSTRACT

The use of human placenta as a substitute for peptone and meat extract in a bacterial growth medium was investigated. *Escherichia coli*, *Serratia marcescens*, and *Micrococcus luteus* were used as test organisms.

Proteins determination of the human placenta showed that it contained about 44.89 protein. While the three different concentrations (50 g placenta / 600 mL water, 100 g placenta / 600 mL water, and 150 g placenta, 600 mL water) of human placenta bacterial growth medium were able to support bacterial life, a distinct difference in comparison to the commercial growth medium was observed. When present in the culture medium at a concentration of 150 g/ 600 mL water, placenta significantly increased the total number of bacterial colonies in all three species after the required 24 hours growth period.

#30

A comparative study of the weights of tilapia nilotica grown in chicken manure-treated water and untreated water.

Aileen Conanan, Jonathan Corpuz, Christopher Cruz, Dianne Ledesma, Christine Ramirez

ABSTRACT

Since the Philippines is a third world country, the fishing industry needs to have something which would be cheaper than commercial feeds. The application of chicken manure as substitute feed at a rate of 500 to 100 kilograms per hectare is practiced (Quimpo, 1981).

Tilapia nilotica which are native to tropical areas have a very good potential in fish culture (Hickling, 1960, cited by Capitan et.al., 1983).

Quimpo (1981) reported that *Tilapia nilotica* or Nile tilapia commands a good price in the Markey. Nile tilapia is more profitable to culture than other tilapia species because it grows faster and much larger.

The acquisition of three aquaria was first done. Chicken manure was then dried (for approximately 8 hours). And was later pulverized so as to mix well with the pond soil. The first aquarium had no chicken manure but the other two contained 250 grams of chicken manure each.

Initial weights of *Tilapia nilotica* fingerlings were taken before transferring them to the aquaria. Weekly weighing of the fingerlings was done thereafter.

Statistical analysis using the t-test was done. It was found out that there was no significant difference between the results of the treatments.

#31

The feasibility of *Anamirta cocculus* seeds as a rodenticide

Juanito Cunanan, Joel Esquejo, Erick Perez, Ruther Ricon

ABSTRACT

This research project aims to prepare an effective rodenticide from *Anamirta cocculus* seeds. Picrotoxin crystals were extracted from *Anamirta cocculus* seeds. For another treatment the *Anamirta cocculus* were roasted then ground. There were three *Mus musculus* per treatment. The four treatments administered to the *Mus musculus* were: control, Dora Rat Killer, ground seeds, and pigeon pellets treated with picrotoxin. We found out that only two *Mus musculus* died out of three in the fourth treatment. Using the chi-square test, we concluded that *Anamirta cocculus* seeds are not feasible as a rodenticide. However, it must be maintained that the treatments were conducted for only 12 hours and results are therefore not conclusive.

#32

The production of polymer blend plak from polystyrene and cellulose and the investigation of its physical and chemical properties

Jose Miguel B Curameg, Pia Marie G hamoy, Liza D Ruivivar, Karl Leonhard F Solis

ABSTRACT

The Styrofoam container is a hallmark of 20th century living. Its basic component is polystyrene, a brittle, amorphous, non toxic thermoplastic polymer. The polymer is made into a foam by injection molding of chlorofluorocarbon propellants, which are known environment-friendly container material by blending polystyrene with the plant fiber cellulose and still came up with a relatively tough packaging material.

Corn (*Zea mays*) hush were boiled in a 25% sodium hydroxide solution to remove non-cellulotic material. The fiber derived from this process (basically cellulose) was mixed in different ratios with Styrofoam dissolved in

toluene to facilitate physical mixing. The resulting mixtures were poured into aluminum containers and hardened. The resultant molds were subjected to quantitative tests for breaking stress, density, and water absorption, and qualitative tests for flammability and reactivity to common substances.

Results obtained showed that the polyblend had breaking stress comparable to the sample Styrofoam. Increasing ratios of Styrofoam gave decreasing density and decreasing water-absorbing capacity. It was also observed that saturation with water makes the 10% and 25% Styrofoam blends lose their rigidity.

The samples, like Styrofoam, did not exhibit thermal or electrical conducting capacity. Unlike Styrofoam, it burns when subjected to a flame, spewing a considerable amount of soot into the air. The larger ratio polystyrene blends leave behind a black, sticky residue, while the smaller ratio blends leave less of this residue and white ash-like fibers in addition. The only common substance which reacts visibly and immediately with any of the blends is sodium hydroxide, which turns in particular the 10% Styrofoam blend yellow.

#33

The feasibility of andropogon citratus (tanglad) as a Rub-on Mosquito repellent

Anthony Dajac, Maria Isabel Dumlao, Alejandro Magsano, Therese Ma Reginaldo, Michelle Samson

ABSTRACT

Many people all over the world die and suffer from mosquito-borne diseases. But these diseases can be prevented by the use of mosquito controls. Probably the best way is to repel the mosquitos themselves. Because of its smell, the group saw the potential of tanglad, mixed with different kinds of oils, as a cheaper rub-on mosquito repellent. A one is to one ratio of tanglad and oil was to be used for preparation of experimental tanglad oil repellent; then were to be tested on the screens of the cages with mosquitoes. Efficiency was found to be 80% for the tanglad-castor oil, and tanglad-coconut oil to be 80% efficient. Castor oil and coconut oils were tested too but to have no repellent effect.

#34

Fermentation of Lactic acid from cassava peelings

Edelyn Echano, mark Gil T dela Cruz, Nadzmier A Sajili, Vergil C Tanginan

ABSTRACT

The microbial cellulose degradation of cassava (*manihot esculenta*) peelings using the local strains of *trichoderma viridae*, an active cellulytic fungus, and subsequently with *Lactobacillus delbrueckii*, and the production of lactic acid from cassava peelings were investigated. Cassava peelings were

ball-milled and pretreated with 1% NaOH. After adding supplementary nutrient to the semi-solid medium and adjusting the pH to 4.0-5.0, it was subjected to cellulosic hydrolysis using *trichoderma viridae* in a Hot Pack Shaker at 125 rpm and a working volume of one liter at 28°C. Glucose concentration was checked after every 12 hours. After the maximum glucose yield was reached, the samples were fermented for lactic acid production using *lactobacillus delbrueckii*, with the pH adjusted to 5.0-5.5 and the temperature reset to 37°C for 48 hours. Initial run yielded 0.865 mg/ml of glucose. This amount however, was found to be insignificant for lactic acid fermentation. Apparently, certain conditions, the amount of fungus inoculated in particular, were not met for optimum glucose yield.

#35

Screening of terminalia catappa (talisai), Anacardium occidentale (kasui), theobroma cacao (cacao) & ethretia navessi (tsaang gubat) for ellagic acid content

Rodrigo Gerardo R Espinas, simonette T Habacon, Christine M Javier, Maureen Florita N Torralba

ABSTRACT

Ellagic acid (C₁₄H₆O₈) is found in berries and nuts. In the Philippines, four species were found to contain this acid: *Terminalia catappa* (talisai), *Anacardium occidentale* (kasui), *theobroma cacao* (cacao) and *Ehretia navesii* (tsaang gubat).

Each of these food items were screened through the following procedure: (1) the extracts were obtained by using the Soxhlet apparatus; (2) The volume of the extracts were measured and noted; (3) The extracts were combined with ethyl alcohol in a 1:1 ratio; (4) The combination of the extract and ethyl alcohol were observed for the indication of the presence of the ellagic acid.

Not one of the samples yielded the expected type of precipitate which was supposed to be pale yellow, crystalline, insoluble in water and refuses to melt even at 680°C. The cacao and tsaang gubat extracts (which were extracted using diethyl ether) yielded precipitates which had shades of yellow. They may or may not be manifestation(s) of the ellagic acid the samples contain.

#36

Feasibility of a mosquito repellent lotion from bidai (occimum basilicum) leaf extract

Elmer Surat Estacio, Christopher Salenga Garcia, Dexter Tarum Santiago

ABSTRACT

The objective of the study is to test the feasibility of bidai (*Occimum basilicum*) leaf extract as an active ingredient for the production of an insect repellent lotion. This study stemmed up from the fact mosquitoes avoid neem trees (trees with peppermint smell characteristics similar to *Eucalyptus*). Bidai is a shrub that grows abundantly in the lowlands. It also possesses peppermint property. But aside from being a medicinal plant, it has no other known use.

There were five samples and six experimentations (one test involved a subject to undergo the experiment without applying any lotion). Each sample has a different extract to lotion base ratio (0.1, 1:10, 1:20, 1:30, 1:40). To test the samples, each ratio was applied on the skin and mosquitoes inside a screened room were allowed to bite the skin for 3 hours each. The results of the test was satisfactory as confirmed by statistical analysis.

The number of mosquitoes that bit and perched the skin of the subjects were counted. Mosquitoes obviously were repelled by the smell of the lotion-extract ratio. Only a minimal (average of 4) number of mosquitoes were not repelled after 3 hours of experimentation and the bites and perching did not occur until after one hour has elapsed from the time of application of the lotion-extract ration.

#37

A feasibility study on the potential of eggshells as an alternative source of fluorescent material

Ernesto V Estor Jr, Myra D Millana, Ma Constanica T Obrero, Sonia Marie B Pascual

ABSTRACT

Certain substances are capable of emitting radiation in the form of light. This phenomenon is known as luminescence. Phosphorescence is a kind of luminescence in which there is a long term emission of light in the presence of an energy source.

Eggshells are known to contain luminescent material. This research aims to test the quality of luminescence in terms of light emission that can be given off by these. Due to the lack of necessary equipment, research was restricted to short term emission, or fluorescence. Eggshells are easily accessible and have no major use. If the research is successful, eggshells may serve as a cheap alternative source of fluorescent material, which at present is imported and thus, expensive. When thoroughly cleansed, eggshells contain an almost pure calcium carbonate (CaCO_3) content. CaCO_3

is a calcite;; calcites are known to be phosphors-they can either be fluorescent or phosphorescent. When baked with a minute amount of a certain substance, called an activator, and then exposed to an energy source, the resulting mixture emits visible light.

The activator used for CaCO_3 was manganese chloride. Six different concentrations of the compound were used. After activation, the mixtures were dissolved in ethanol (for testing purposes), and then tested with a UV spectrofluorimeter.

Four out of the six activated samples showed emission, though in minimal amounts.

#38

Effectivity of *Chlorella* in Reducing the Nitrate and Ammonia Content of Agricultural Wastewater

Getty John Fernandez, Joan Christian Geli, Maxine Tanya Hamada, Leander Linus Phillip Simpao

ABSTRACT

Green algae have been found to have the potential to purify water. This study aims to determine the effectivity of *Chlorella* in reducing the nitrate and ammonia content of agricultural wastewater. Two set-ups in three replicates were prepared for the experiment. Set-up I was a solution of ammonium nitrate (NH_4NO_3) and distilled water while Set-up II was a wastewater sample from Marikina river enriched with a commercial fertilizer and obtained through the River Revival Program of the Department of Environment and Natural Resources. Initial concentrations of nitrate and ammonia were taken. *Chlorella* was introduced into both set-ups at a 5% volume ratio. Both set-ups had a control where no algae was introduced. The set-ups were then aerated and exposed to natural sunlight and room temperature for a period of twelve (12) days. The final concentrations of nitrate and ammonia were then determined. The results were subjected to the T-test for correlated samples. A significant difference between the decrease in pollutants in the replicates and the control was found in set-up I but not in set-up II.

This study shows therefore that *Chlorella* can reduce the nitrate and ammonia content of agricultural wastewater and is most effective when applied to moderately polluted agricultural wastewaters.

#39

Biogas Production from Fish Innards

Nilo Vincent FlorCruz, Ma. Alve Lamadrid, Candice Charmaine Roscom, Rex Ariel Tungala, Doris Uy

ABSTRACT

The objective of the research was to determine the feasibility of using fish-innards as a source of biogas. It also involved a comparative analysis of the efficiency of a plastic digester as compared to the conventional glass digester.

Four set-ups were made, two for the plastic digester and another two for the glass digester. The basic set-up was made up of three containers: the digester, the water-displacement container and the receiver. The gas produced in the digester displaced the water into the receiver. The volume of the gas innard-water mixture had a ratio of 1:2. The mass of the starter was ten percent of the total mass of the fish innards-water mixture. Gas production was observed daily for seven weeks.

After the fermentation period, the gas was checked and was found to contain methane. The results showed that fish innards can produce a significant amount of biogas. Statistical analysis showed that there is no significant difference in the efficiency of the plastic digester as compared to the conventional glass digester.

#40

The Feasibility of Oedogonium sp. Extract as a Substitute for Fuel Oil

Allan E. Avenido, Erwin A. Dayrit, Olson Jodl Gayatin, Jose Genaro R. Layug

ABSTRACT

Two species of marine and freshwater algae, were first screened to determine which would yield a higher percentage of extracts. It was found out that the Oedogonium sp., a freshwater algae, yielded 73.86% of its weight as its extract. The algae was first airdried for 24 hours before it was extracted with methanol. The liquid component was again airdried for 24 hours to allow the evaporation of the solvent, leaving the extract behind. A strip of the extract weighing 0.00582 g was mixed with 4 ml of dichloromethane. A total of 10 microliters of the solution was scanned. It was found out that the extract has hydrocarbons, 20% of which are the aliphatics or the straight-chained hydrocarbons, 17% were aromatics, and the 63% are the polar groups. The chart for crude oil states that the extract could be classified as a low-quality crude oil. The flame test proved that the extract was flammable. However, the results are not enough to state that the extract could be a substitute for fuel oil for certain specifications are yet to be determined. The group encourages other researchers to further test the other qualities of the extract.

#41

The Effectivity of *Solanum melongena* (Eggplant) Leaf Fumes as Mosquito Killer and its Harmful Effects on *Mus musculus* (White Mice)

Kidlat M. de Guia, Tito Caesar G. Sarmago, Voltaire Z. Sibal, Lawrence G. Villegas

ABSTRACT

Based on previous researches eggplant leaves effectively kill mosquitoes. The present study aims to confirm the previous findings as well as any possible detrimental effects of the fumes on the respiratory organs of white mice (*Mus musculus*).

Leaves from eggplants were gathered, dried and ground into fine particles. These ground leaves constituted the experiment. The mosquitoes were captured and subjected to three tests: a.) a group not subjected to eggplant fumes; b.) a group subjected to paper fumes; c.) a group subjected to the fumes from the ground eggplant leaves. Data from this study shows no significant difference in the potency of the leaf fumes in killing mosquitoes as compared to paper fumes.

The second part of this study constitutes the using of the same three treatments on white mice. The results show that there is no significant difference in weight gain and activity between those subjected to leaf fumes and those given paper fumes. Observations do indicate that the eggplant leaf fumes are narcotic to some degree and that its use as an insecticide better not be in the form of fumigant.

#42

Nonconventional Management Practices on Poultry

John XXV P. Lambino, Crispulo M. Larraga, Jose Ernie C. Lopez, Bernard S. Vega, Nathaniel M. Villanueva

ABSTRACT

Nonconventional management practices were tested on a group of chicks, randomly divided into 3 groups with 10 chicks per group. Group A was the control; cutting away of contour feathers – Group B; and cutting away of contour feathers and using them as feed additives – Group C. Initial weighing of the individual chicks was done after the cutting of feathers. Final weighing followed 7 days later. The gathered feathers were heated in the oven for 1 hour, cut into fine bits and mixed with the growing mash of Group C (for daily feeding). The percent weight gain (p.w.g.) of each chick was computed. Application of treatment and observation was done for 5 weeks. Analysis of Variance (ANOVA) showed that a significant difference among the mean p.w.g. of the chicks exist only during the fifth week. When ANOVA was done on the over-all p.w.g. of the chicks (from second week to the last week), a significant difference was observed. One-tailed t-tests showed that the mean

p.w.g. of the chicks in Group B is greater than that in Group A. The chicks of Group C has the lowest mean p.w.g. Cutting away of contour feathers is therefore conducive to the weight gaining process while the combination of cutting away of feathers and using feathers as feed additives is not.

#43

The feasibility of talahib as an oil retriever

James David, Fernando Victor Mina, Madeliza Padama, Edwehna Elinore Paderna, Wowie Salbibia

ABSTRACT

Talahib, an abundant plant species in the Philippines, is suspected to adsorb liquid onto external system. This characteristic of the said plant species is the basis of this study, a study which aims to contribute to the conservation of oil, and to help in the prevention of oil shortage and with the protection and preservation of marine life.

This study determines the potential of talahib as an oil retriever. It specifically determines the number of grams of talahib needed for a certain amount of oil is determined and measured by spilling a known volume of oil over a known volume of water, and putting a fixed amount of talahib over the oil spill. After a few minutes, the talahib over the oil spill is gathered, and the oil retrieved is extracted from it. The extracted oil is the retrieved oil. The amount of retrieved oil is then measured.

This study shows that a known amount of talahib can only adsorb to a certain amount of oil. One gram of talahib can retrieve approximately 1.26 ml of oil spill. Subsequently, we need approximately 0.78 g of talahib to be able to retrieve 1.0 ml of oil.

#44

Examination of potential factors which affect the phosphate removing properties of chitin through ion-exchange chromatography.

Darius M Lim, Jeffrey Garret A Minosa, Ronaldo D Surara

ABSTRACT

A polysaccharide found abundantly in nature, chitin, is a cellulose like biopolymer found in certain kinds of fungi, insects, and in the exoskeletons of crustaceans. This was used as a phosphate remover using the principle of ion-exchange chromatography, this study seeks to find out which combination of factors would remove the most phosphates from polluted water.

Forty grams of crab shells were collected, cleaned, dried, ground, treated with two hundred milliliters of one molar NaOH, and then treated with two hundred milliliters of one molar HCl to extract the chitin.

Five sets of two pipettes each were filled with 2.75 g, 1.5 g, 1.0 g, 0.27 g, and 0.0 g of chitin. Each set contains one 5 milliliter and one 10 milliliter

pipette and the last set serves as the control. Fifty milliliters of polluted water was passed through each column making ten trials and another 5 sets was made and the procedure repeated making twenty trials all in all. Each sample was then treated with molybdate solution, followed with the addition of isobutanol, ethanol, and stannous chloride reagents. Spectrometric and statistical analysis tests were then performed and showed significant differences between the phosphate contents of the treated and untreated samples as well as between the different sets of the treated samples. These tests were compared with the standard calibration curve for phosphates to ensure that the mistakes if any are to be minimal.

#45

The feasibility of coir dust as tile binder

Benjo C Magbuhat, Edward B Jamelarin, Glenn A Beley, Lewelyn V Mejias

ABSTRACT

The purpose of this research was to find out how effective coir dust could be used as a binder for making tiles and if so, what concentration of coir dust is best. Coir dust is rich in lignin which has binding properties.

The coir dust was powdered and mixed with clay.

Different ratios of 0:1, 1:4, 1.5, and 1:6 were prepared. The preparations were put into moulds and were then air dried. The tiles were then baked to produce the finish products.

The finished tiles were tested for their impact resistance and their resistance to absorb water. A commercial tile was included in the test for comparison.

The results showed that the tiles with coir dust were a little bit inferior in impact resistance and a little bit superior in resistance to absorb water compared with the commercial tile. Statistical analysis showed that there is no significant difference in the results of both tests.

The coir dust binded tiles can be compared with commercial tile in durability. No particular ratio proved the best.

#46

A comparative study of commercialized hotdogs

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ABSTRACT

The aim of the research was to determine and compare the nutritional value of five different brands of commercial hotdogs. To this end, the brands were coded A, B, C, D and E, and subjected to different test to determine moisture content, carbohydrates content, ash content, fat content, and protein content.

Results show that these values varied significantly, so that it can be said that different brands of hotdogs have different nutrition content and these can be related to the physical properties of the hotdogs.

In addition, the results show that there is an association between nutritional value and selling price: the more nutritious hotdogs tends to be more expensive. Of the five brands studied, the best brand based on nutritional value, acceptability and palatability and selling price is Sample B.