iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 13 **Issue:** V **Month of publication:** May 2025

DOI: https://doi.org/10.22214/ijraset.2025.70297

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 13 Issue V May 2025- Available at www.ijraset.com

Preparation of Nourish Cereals Premix

Prof. Prashant Watkar[1], Prof. Ajay Durge[2], Priya Wasnik[3], Mamta Varshewad[4], Jagruti Narule[5]
[1, 2]*Assistant Professor, Department Food Technology, BIT, Ballarpur, 442701*
[3, 4, 5]*Reasearch Scholar, Department Food Technology, BIT, Ballarpur, 442701*

Abstract: ***The mixture was packed mal nutration is widely prevalent in children wuth 6-23 months of age group. To provide naturally adequate and balanced complementary foods, it is important to have food mixture of variety of foods that full fill macro and micro-nutrients infant. The objective of the study was to develop nutrious infant food premix to improve the nutritional status of the malnourished infants from locally available resources by using house hold food processing techniques and analyse them for sensory attributes as well as nutrients. Airtight plastic container kept at room temperature the plastic ingredients of IFP were mixed in such a way so that the mixture can provide at least 1/3rd of the days requirenment of energy***
Keywords: Preparation of Nourish Cereals Primix, Cerelacs.

I. INTRODUCTION

Children between the ages of 6 and 24 months are particularly vulnerable to malnutrition and basic factor is the low nutritional density of complementary foods and improper weaning practices. It is essential to have nutrient food mixes or a range of foods that meet an infant's micro and macro-nutrient demands in order to provide nutritionally balanced and appropriate complementary foods to infants. The objective of this study was to develop nutrient-dense premixes for children to enhance infants' nutritional status from resources available locally by applying household food preprocessing techniques and analyzing them for nutrients as well as sensory attributes. In the present study, the premix development process involves two phases. First of all, premixes were prepared by mixing cereals and pulses only, before that different preprocessing techniques like soaking, malting, germination, de husking, roasting, cooking and straining were applied to enhance digestibility and availability of nutrients. Out of the cereals and pulses premixes, the most organoleptically accepted variant was selected and in the next phase fruits, vegetables, nuts, roots and tubers were added in the most accepted variant prepared from cereals and pulses combinations and then evaluated for various nutritional and sensory quality attributes Nourish Cereals Premix Infant Foods are a range of infant cereals designed to provide essential nutrients for babies' growth and development. Here are some key aspects NourishCereals Premix Infant Food (Rice, cereals and dry fruits, Makhana) Nourish Cereals Premix Infant Food with Milk and other Nutrients Essential vitamins and minerals (Iron, Calcium, Vitamin D, etc. Rich in essential vitamins and minerals Whole grain cereals provide fiber and nutrient Supports healthy growth and development. Helps build strong immune system Age Recommendation Suitable for infants from 6 months onwards Can be used as a complementary food to breast milk or formula. Preparation Instructions : Mix 1-2 teaspoons of cereal with breast milk, formula, or water , Gradually increase the amount as per baby's preference and digestive tolerance. Storage and Safety: Store in an airtight container Keep in a cool, dry plac. Check expiration date before use. Follow proper preparation and feeding instructions to ensure safety. Regulatory Compliance: Compliant with Indian food safety regulations (FSSAI), Meets international quality and safety standards Nutritional Benefits of Cereal Premix Vitamin Enrichment Cereal Premix is often enriched with essential vitamins, such as vitamin D, vitamin B12, and vitamin A, crucial for healthy growth and development.

II. MATERIALS AND METHODS

1) Black gram
2) Rice
3) Green grams
4) Red Lentils
5) Moth Beans
6) Whole Green Gram
7) Makhana
8) Kashew
9) Almond
10) Peanut

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 13 Issue V May 2025- Available at www.ijraset.com

III. INGREDIENTS

A. Black Grams

The Black Gram (Vigna mungo), a small legume akin to the cowpea and mung bean, originated in ancient India and remains a dietary staple, known interchangeably as "urad dal." This legume, with its creamy white interior exposed through splitting and peeling, is sometimes marketed as ivory white lentils. In Southern India, it is commonly ground with rice to produce flour for traditional breads and consumed whole as a meat substitute in curries and stews throughout the country. Cultivated across Europe, North America, Africa, and Asia, Black Gram continues to be a crucial crop in India and Sri Lanka due to its versatility and relatively high protein content, catering to vegetarian diets prevalent in these cultures. Thriving in regions with abundant rainfall during the growing season, it can also be planted in the dry season with proper irrigation. Often used as a cover crop to prevent erosion and replenish nitrogen in the soil, Black Gram prepares the land for subsequent crop plantings. In Indian traditional medicine, or "Ayurveda" Black Gram holds significance. Ayurvedic practitioners recommend it to enhance male sexual vigor, fortify the nervous system, and act as an anti-inflammatory agent.

Health Benefits

- High in Protein: Black grams are an excellent source of protein, making them a great option for vegetarians and vegans.
- Rich in Fiber: Black grams are high in dietary fiber, which can help promote digestive health and prevent constipation.
- Good Source of Minerals: Black grams are a good source of minerals like iron, potassium, and magnesium, which are essential for maintaining healthy blood pressure, bone health, and muscle function.
- Antioxidant Properties: Black grams contain antioxidants that can help protect against oxidative stress and inflammation in the body.
- May Help Lower Cholesterol: The fiber and protein in black grams may help lower cholesterol levels and reduce the risk of heart disease.

B. Rice

White rice, also known as polished rice, is a type of rice that has been processed to remove its outer layers, leaving only the starchy endosperm. White rice has been a staple food in many cultures for thousands of years. The process of polishing rice to remove its outer layers originated in ancient China over 2,000 years ago.

Health Benefits

White rice is often criticized for its lack of nutritional value, but it can still be a part of a healthy diet when consumed in moderation. Here are some potential health benefits of white rice:

- Gluten-free: White rice is gluten-free, making it a good option for people with gluten intolerance or celiac disease.
- Low in fat: White rice is low in fat, making it a good option for people who are trying to lose weight or reduce their fat intake.
- Easy to digest: White rice is easy to digest, making it a good option for people with digestive issues.

C. Green Grams

Mung dal, scientifically known as Vigna radiata, is a legume native to India and widely cultivated in many parts of Asia and Africa. It is typically small, oval-shaped, and green in color, though it can also be found in yellow or split forms. Mung dal is a staple in many cuisines, especially in South and Southeast Asia. Mung dal is highly nutritious and a rich source of protein, fiber, vitamins, and minerals, making it a key ingredient in a balanced diet. It is low in calories and provides a steady source of energy. It is used in various ways in cooking:

- Cooked as dal (a stew or soup).
- Used in salads or as a filling in vegetarian dishes.
- Ground into flour to make sweets and snacks, such as mung dal halwa or mung dal pancakes. Can be sprouted for use in salads or soups

Health Benefits

Mung dal is known for its numerous health benefits, such as:

- Digestive Health: The high fiber content supports the digestive system and prevents .
- Heart Health: It is heart-healthy due to its low cholesterol content, high potassium, and which help regulate blood pressure.
- Weight Management: Mung dal is low in calories and high in protein and fiber, making it a filling and weight-friendly food.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

- Detoxifying Properties: Mung dal is often used in detox diets, especially in Ayurveda,due to its ability to cleanse the body and improve skin health.
- Bone Health: Mung dal's magnesium and phosphorus content are beneficial for bone strength.

Mung dal is commonly used in Indian dishes like mung dal curry, khichdi, and dal soups. It is also used in the preparation of sweets, such as mung dal halwa or laddus. Like toor dal, mung dal is an essential part of traditional South Asian and Southeast Asian diets

D. Red Lentils

Masur dal, scientifically known as Lens culinaris, is a popular legume widely grown in India, the Middle East, and Africa. This dal is primarily red or yellow in color. Masur dal is a rich source of protein and is abundant in various minerals, vitamins, and fibers. It is used in various forms in the diet, such as: Cooked as dal. In vegetable or curry dishes. In soups and stews. This dal is low in calories, high in protein, fiber, and has a low glycemic index, making it ideal for vegetarian diets. It is considered beneficial for heart health and weight loss. It also contains iron and folate, which help in increasing hemoglobin levels in the blood.In India, masoor dal is very popular and is used in various traditional dishes like dal, soups, and Indian chutney.

Health Benefits

- High in Protein: Red lentils are an excellent plant-based protein source, making them ideal for vegetarians and vegans.
- Rich in Fiber: They promote digestive health, help regulate blood sugar levels, and may aid in weight management by promoting satiety.
- Heart Health: Their high fiber, folate, and magnesium content contribute to reduced cholesterol levels and improved heart health.
- Iron Source: Red lentils provide a good amount of non-heme iron, supporting energy levels and preventing anemia, especially important for people on plant-based diets.
- Low in Fat: Naturally low in fat and calories, they're a heart-healthy and weight-friendly option.
- Supports Blood Sugar Control: With a low glycemic index and complex carbs, red lentils help manage blood glucose levels.
- Rich in Antioxidants: They contain polyphenols that help fight inflammation and protect against chronic diseases.

E. Moth Beans

Moth beans, also known as matki or dew beans, are a type of small, brown or green legume that is commonly used in Indian cuisine. Here are some key things to know about moth beans:

Health Benefits

- Supports Heart Health: The fiber, potassium, and antioxidants in moth beans can help support heart health by reducing cholesterol levels and blood pressure.
- Helps Manage Blood Sugar: The fiber and antioxidants in moth beans can help slow down the absorption of sugar into the bloodstream, making them an excellent option for people with diabetes.
- Supports Digestive Health: The fiber in moth beans can help promote digestive health by preventing constipation and supporting the growth of beneficial gut bacteria.
- May Help Reduce Cancer Risk: The antioxidants and phytochemicals in moth beans may help reduce the risk of certain types of cancer, such as colon, breast, and prostate cancer.

F. Whole Green Gram

Whole green gram, also known as whole mung beans, is a type of legume that is widely cultivated and consumed in many parts of the world. Here's a comprehensive overview of whole green gram.

Health Benefits

Whole green gram has been associated with several health benefits, including:

- Supporting heart health by reducing cholesterol levels and blood pressure.
- Helping to manage blood sugar levels and improve insulin sensitivity.
- Supporting digestive health and preventing constipation.
- Providing antioxidant and anti-inflammatory effects.
- Supporting immune function and reducing the risk of infections.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

G. Makhana

Makhana, also known as fox nuts or lotus seeds, is derived from the Euryale Fox plant, which grows in ponds and wetlands. It is widely used in Indian cuisine and traditional medicine for its health benefits.

Nutritional Benefits:

- Rich in Protein: A good source of plant-based protein, essential for growth
- Low in Calories: Ideal for weight management, being low in fat and calories.
- High in Fiber: Supports digestive health and helps in managing blood sugar levels.
- Packed with Minerals: Contains calcium, magnesium, potassium, iron, supporting well-being.
- Antioxidants: Makhana contains flavonoids, which help combat oxidative stress.

Health Benefits:

- Improves Digestion: The fiber content promotes healthy digestion and regular bowel movements.

H. Cashew

Cashews are the seeds of the cashew apple, a fruit from the Anacardium occidentale tree, which is native to Brazil but is now grown in tropical regions worldwide. Cashews are popular as a snack and are also used in cooking, baking, and as an ingredient in various products.

Health Benefits

- Rich in Healthy Fats: Cashews contain monounsaturated fats, which are heart-healthy and help lower bad cholesterol.
- Good Source of Protein: They are an excellent plant-based protein, beneficial for vegetarians and vegans.
- Supports Heart Health: The monounsaturated and polyunsaturated fats, along with magnesium and potassium, promote cardiovascular health.
- Bone Health: Cashews provide magnesium and phosphorus, essential for maintaining strong bones.
- Boosts Immune Function: Cashews contain zinc and copper, which are important for immune system function and wound healing.
- Promotes Skin Health: The antioxidants, including vitamin E, support skin health by fighting free radicals.
- Aid in Weight Management: Though calorie-dense, cashews' protein and fiber content may help control hunger and maintain a healthy weight when consumed in moderation.

I. Almond

Almonds are edible seeds from the fruit of the Prunus dulcis tree, commonly known for their health benefits and nutritional value. Native to the Middle East and South Asia, almonds are now grown globally, particularly in the United States, Spain, and Italy. They are consumed raw, roasted, or used as ingredients in various products such as almond butter, almond milk, and snacks.

Health Benefits

- Rich in Healthy Fats: Almonds are an excellent source of monounsaturated fats, which are good for heart health and help lower bad cholesterol levels.
- High in Protein: They are a great plant-based source of protein, beneficial for muscle repair and growth.
- Supports Heart Health: Almonds are rich in antioxidants (especially vitamin E) and magnesium, which help maintain a healthy heart by reducing oxidative stress and regulating blood pressure.
- Promotes Weight Management: Despite being calorie-dense, almonds help control hunger due to their high fiber and protein content, supporting weight loss or management when consumed in moderation.
- Good for Skin Health: Vitamin E in almonds helps protect the skin from aging and UV damage while maintaining skin hydration.
- Bone Health: Almonds provide calcium and magnesium, which are crucial for strong bones and preventing conditions like osteoporosis.
- Supports Brain Health: Rich in vitamin E, almonds help prevent cognitive decline and protect against neurodegenerative diseases.

J. Peanut

Peanuts, also known as groundnuts or Arachis hypogea, are a legume plant native to SouthAmerica. They are widely grown for their edible seeds, which are commonly used in snacks, cooking oils, and various food products. Here's some key information about peanuts:

1) Botanical Classification

Family: Leguminosae (Pea family) Genus: Arachis

Species: Arachis hypogea

2) Growth and Cultivation

Peanuts are typically grown in warm climates, requiring a long, hot growing season after pollination, develop into peg that grow into the soil, where the peanuts mature.

They thrive in sandy soils with good drainage.

3) Nutritional Content

Peanuts are rich in protein, healthy fats (monounsaturated and polyunsaturated fats), vitamins (especiall vitamin E) and minerals like magnesium, potassium, and phosphorus.

Health Benefits

- Rich in Protein: Great plant-based protein source, helping with muscle repair and growth.
- Heart Health: Contain healthy fats (monounsaturated and polyunsaturated) that may reduce heart disease risk.
- Fiber: Aid digestion and support gut health.
- Vitamins and Minerals: High in B vitamins, especially niacin and folate, plus magnesium, phosphorus, and zinc.
- Antioxidants: Contain resveratrol and other antioxidants that help protect cells from damage.
- Blood Sugar Control: Low glycemic index and high protein/fiber content help manage blood sugar levels.

IV. PREPARATION OF NOURISH CEREALS PRIMIX :

Preparation of cereal nourish premix Selected the raw materials including in rice green gram , red lentils , moth bean , whole green gram , black gram all this are clean and this ingredients mixed together and wash it and placed it in a cotton cloth to drying the ingredients . Then cashew Almond makhana peanuts and all cereals mix they grind finely in the mixer . Boil the water and added according to taste salt and chilli powder and then add the premix .

Flowchart Of Nourish Cereals Primix



ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 13 Issue V May 2025- Available at www.ijraset.com

V. PREPARATION OF NOURISH CEREALS PRIMIX

1) Step 1 : Select high-quality raw ingredients such as cereals, grains dried fruits, and other additives like Makhana, Peanuts sugar, salt, or flavor agents.
2) Step 2 : Use water to remove dust, dirt, stones, and other foreign materials. Cleaning ensures the raw materials are free from impurities and safe for processing.
3) Step 3 : Soak the ingredients in room temperature. Roast cereals, nuts, or seeds to enhance flavor, aroma, and shelf life. Roasting also reduces moisture content and makes the ingredients easier to process.
4) Step 4 : Grind or flake cereals and grains depending on the desired texture of the premix. Grinding results in a fine powder, while flaking provides a coarser texture.
5) Step 5 : Precisely measure and weigh the raw materials according to the desired composition and recipe. This step ensures the correct balance of ingredients.
6) Step 6 : Blend all ingredients, such as grains, powdered cereals, and additive thorough industrial mixers to achieve a uniform mixture.
7) Step 7 : Pass the blended premix through a fine mesh or sieve to remove lumps and ensure particle size. This step ensures consistency in the final product.
8) Step 8 : Pack the premix in moisture-proof, airtight, and food-safe containers orpouches.Packaging protects the product from contamination and extends shelf life.

VI. RESULT AND DISCUSSION

A. *Chemical Analysis Of Nourish Cereals Premix*

1) *Estimation of Moisture*

Moisture content was determined using the Oven drying method. Approximately 3 grams of the sample were weighed (W2) on pre-weighed petri plates (W1) and placed in an blow dryer at 45ºC for 4 hours. After drying, the samples were cooled in airtight desiccators to prevent moisture exchange with the environment.

$$\%\ Moisture = \frac{\text{Loss in weight} \times 100}{Weight\ of\ sample}$$

$$\%\ Moisture = \frac{0..19 \times 100}{3}$$

This Moisture Content In the Sample is 6.3%.

2) *Estimation of Total Ash*

For ash determination two gram of sample taken in a silica crucible was ignited on a heater and later shifted to a muffle furnace until clean ash was obtained. The temperature of furnace was raised to 550º C ± 15º C5. The weight of residue was noted and the percent ash was calculated as under:

$$\%\ Ash = \frac{\text{Weight of residue} \times 100}{Weight\ of\ sample}$$

This Moisture Content In the Sample is 5.6%.

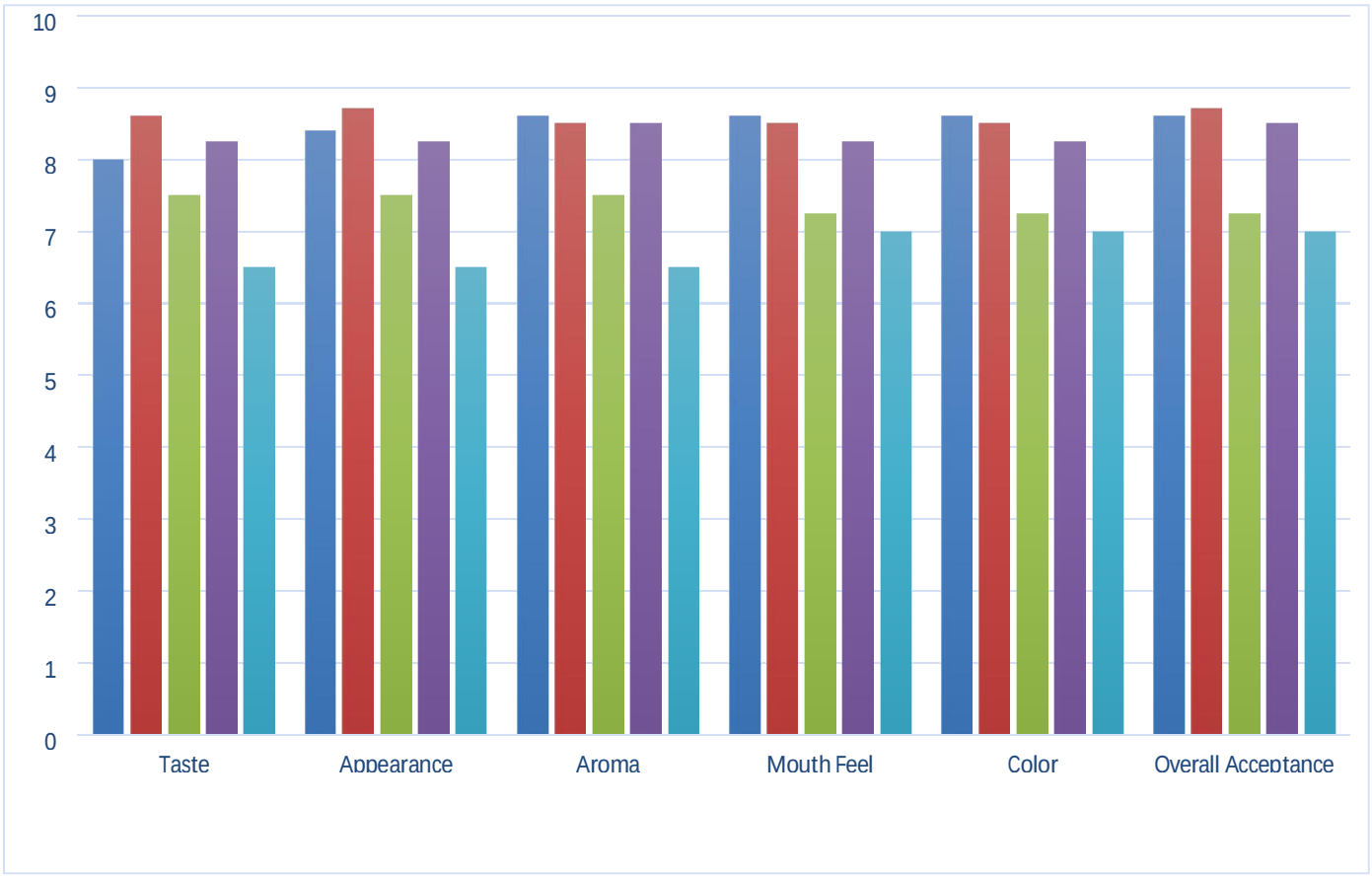
Proximate analysis of Nourish Cereals Premix

Proximate Analysis	Result
Moisture Content	6.3%
Ash Content	5.6%

Moisture Content: Moisture Content of Nourish Cereals Premix was found to be 6.3% is Proximate analysis.
Total Ash : Ash Content of Nourish Cereals Premix was found to be 5.6% in Proximate analysis.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

B. Sensory Graph



C. Final Product



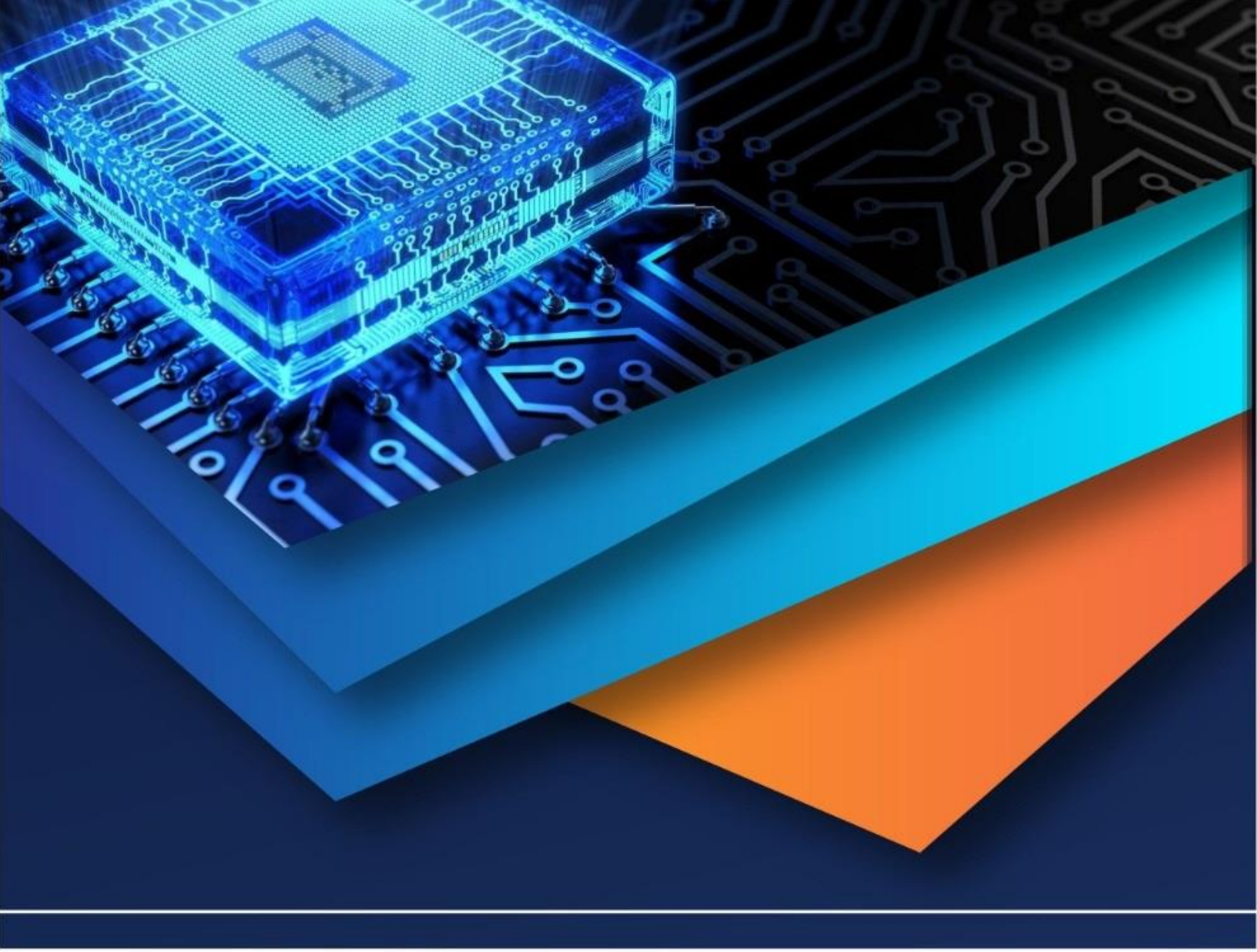
VII. CONCLUSION

Nourish cereal premix offers a convenient and nutritious option for individuals seeking a quick, healthy meal or snack. With its blend of wholesome ingredients, it provides essential nutrients like fiber, vitamins, and minerals, contributing to overall well-being. The premix is versatile, allowing for customization with added fruits, nuts, or other toppings to suit individual preferences. Its easy preparation method ensures that anyone, regardless of cooking skill, can enjoy a nourishing and balanced meal in just a few minutes. Nourish cereal premix is a practical choice for those looking to maintain a healthy lifestyle while savin.

REFERENCE

[1] Chauhan, K., & Maurya, N. K. (2024). Wholesome Grains in Every BiteQunioaPancake Premix Innovation. J. Nutrition and Food Processing, 7(9)
[2] Bafila, P., Bisla, G., & Chauhan, U. (2023). Development and Nutritional Evaluation of a Locally Sourced Nutrient Dense Premix Using Househol Preproces MTechniquInnovative Approach to Complementary Feeding. Indian Journal of Health andWellbeing, 14(3), 361- 364.
[3] Chauhan, K., & Maurya, N. K. (2024). Wholesome Grains in Every Bite: QunioaPancake Premix Innovation. J. Nutrition and Food Processing, 7(9).
[4] Teshome, M. S., Verbecque, E., Mingels, S., Granitzer, M., Abessa, T. G., Bruckers, L., ... & Rameckers, E. (2024). Investigating the Effects of Dietary Supplementation and High- Intensity Motor Learning on Nutritional Status, Body Composition, and Muscle Strength Children with Moderate Thinness in Southwest Ethiopia: A Cluster-Randomized Controlled Trial. Nutrients, 16(18), 3118.
[5] Khor, G. L. (2003). Update on the prevalence of malnutrition among children in Asia Nepal Med Coll J, 5(2), 113-22.
[6] Šimėnaitė, G. (2023). Vaikų ir paauglių galvos ir kaklo sritiužd egimairetrospektyvinanalizė (Doctoral dissertation, Vilniaus universitetas.).
[7] Kiosia, A., Dagbasi, A., Berkley, J. A., Wilding, J. P., Prendergast, A. J., Li, J. V., ... Frost G. (2024). The double burden of malnutrition in individuals: Identifying key challenges and re-thinking research focus. Nutrition Bulletin.
[8] Mudibo, E. O., Bogaert, J., Tigoi, C., Ngari, M. M., Singa, B. O., Lancioni, C. L., . Gonzales, G. B. (2024). Systemic biological mechanisms underpin poor post-discharggrowth among severely wasted children with HIV. Nature Commu nications, 15(1), 10299.
[9] Sturgeon, J. P., Mutasa, K., Bwakura-Dangarembizi, M., Amadi, B., Ngosa, D., Dzikiti, A. & Prendergast, A. J. (2025). Therapeutic interventions targeting enteropathy in severe acute malnutr Preparation of Nourish Cereals Premix
[10] ition modulate systemic and vascular inflammation and epithelial regeneration. EBioMedicine, 111.
[11] Bhutta, Z. A. (2024). The quest to optimize management of severe childhood malnglobally. The American Journal of Clinical Nutrition, 120(3), 463-464.
[12] Phiri, T. N., Weatherill, J. W., Monford-Sanchez, E., Serrano-Contreras, J. I., MelKunaka, M., & Kelly, P.
[13] (2024). Novel gastrointestinal tools (GI Tools) for evaluating functional capacity in adults with environmental enteropathy in Zambia and Zimbabwe: A sectional study protocol. F1000Research, 13, 956.
[14] Lukwa, A. T., Chiwire, P., Akinsolu, F. T., Okova, D., & Hongoro, C.(2024).Doubleburden of malnutrition among women and children in Zimbabwe: a pooled logisticregression and Oaxaca-Blinder decomposition analysis. Frontiers in Public Health, 12, 1451898.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)