



Formulation And Evaluation Of Protein-Rich Nutraceutical Powder For Weight Gain.

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❖ ABSTRACT:

This research article aims to formulate protein powder for weight gain; as well as evaluate the efficacy and safety of nutraceuticals used in protein powder to promoting health and preventing disease. A systematic review was conducted, analyzing randomized controlled trials and observational studies from the past decade. The nutraceuticals studied included vitamins, minerals, herbal extracts, and other dietary supplements. Further research is needed to establish clear guidelines on the use of nutraceuticals for health promotion and disease prevention.

In recent years, there has been growing interest in developing nutraceuticals that address specific health needs. One such area is weight gain, especially for individuals who are underweight or seeking to build muscle mass. This study aimed to formulate a protein-rich nutraceuticals powder specifically designed to promote healthy weight gain

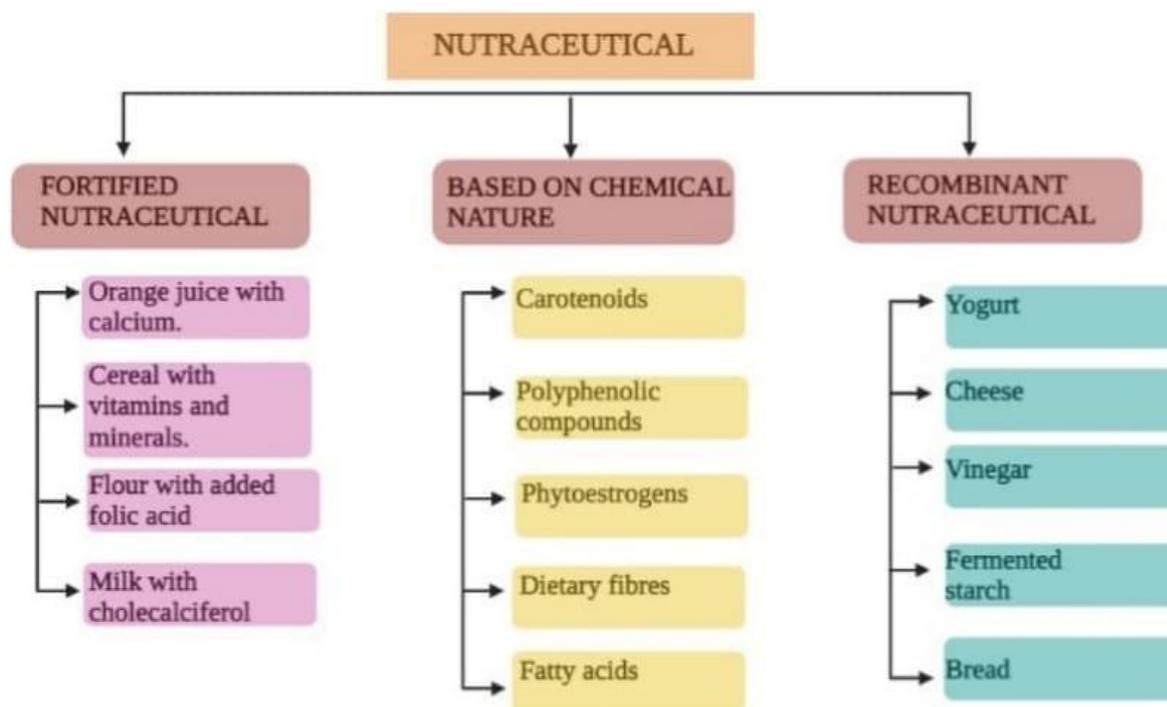
From a purely pragmatic standpoint, consuming protein post-workout represents an opportunity to feed; this in turn contributes to one's total daily energy and protein intake. Furthermore, despite recent suggestions that one does not “need” to consume protein during the immediate (1 h or less) post-training time frame, it should be emphasized that consuming nothing offers no advantage and perhaps even a disadvantage.

Thus, based on performance and recovery effects, it appears that the prudent approach would be to have athletes consume protein post-training and post-competition.

➤ **KEYWORDS:** Protein, Dietary Supplement, Minerals, Vitamins, Balanced diet, weight gain, food, protein powder, healthy life, Health.

❖ INTRODUCTION:

Nutraceuticals, a portmanteau of "nutrition" and "pharmaceuticals," represent a rapidly growing sector in the field of health and wellness. These bioactive compounds derived from foods, herbs, and dietary supplements have gained significant attention for their potential health-promoting and disease-preventing properties. With increasing consumer interest in natural and alternative therapies, the global nutraceutical market has expanded exponentially in recent years. Despite their popularity, the scientific evidence supporting the efficacy and safety of nutraceuticals remains variable and sometimes conflicting. This research aims to explore the current state of knowledge regarding the benefits, mechanisms of action, and potential risks associated with various nutraceuticals. Through a comprehensive review of existing literature, we seek to provide valuable insights that can guide healthcare professionals, researchers, and consumers in making informed decisions about the use of nutraceuticals for health enhancement and disease prevention.



Dietary protein plays a critical role in countless physiological processes in the body. The current Recommended Dietary Allowance (RDA) for healthy individuals is 0.8 g/kg/day (1). It is increasingly evident, however, that protein intake of at least 1.4–1.6 g/kg/day (2) would be more appropriate for active individuals attempting to optimize training adaptations. In an effort to meet this threshold, protein supplements are often consumed. In 2015, protein powder sales were valued at 4.7 billion U.S. dollars and were second only to sport drinks in the sports nutrition

are crucial to living a healthy life. Now, it is not always possible to measure and intake the constituents, and thus, as a rule of thumb, it's good to follow a healthy and balanced diet.

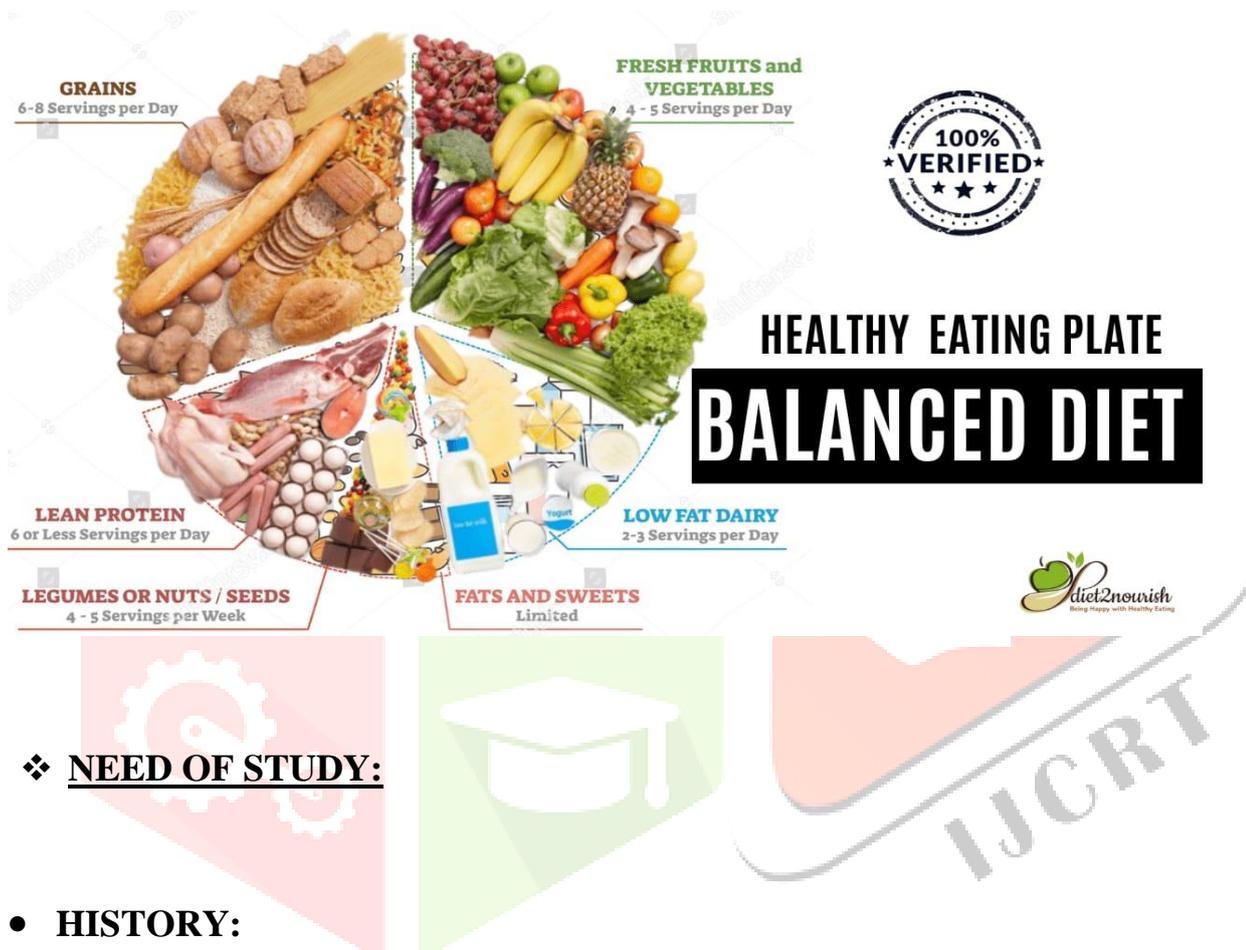
It is said that the feeling of food depends on the person's ability to tolerate, illness, or the need for restriction. This is the reason; some people find it challenging when they are re-learning to eat after a stroke or surgery.

What is the Need For Maintaining the Constituent of Foods?

Food and its components play a major role in our lives. Whether it's a baby, young children, adolescent, or a complete grown-up man, the human body grows at a rapid rate until a particular age. The components of food are required for fueling the growth and maintaining the body after the growth is stopped. Human body cells need to grow and develop just like we do. It is actually the body parts, including cells, tissues, bones, and muscles that grow, and we, from the outer layer, see ourselves as growing. Protein is the building

block for our body, and thus, it is a vital inclusion for growth and maintaining a healthy living. Protein with the combination of fats, minerals, and other ingredients provides the best nutrients to our body. The growing phase of our body needs some extra amount of nutrients when compared to the latter part.

Maintaining a good link between weight and nutrition can help people reduce the symptoms of chronic diseases and an overall decline in health. Before it's too late, consider taking steps to improve your dietary rules by introducing a well-consulted balanced diet.



The concept of nutraceuticals dates back thousands of years, rooted in traditional medicine systems that recognized the therapeutic properties of certain foods and herbs. Here's a brief history of nutraceuticals:

Ancient Civilizations: Ancient civilizations, such as the Egyptians, Greeks, and Chinese, used foods and herbs for medicinal purposes. Ingredients like garlic, honey, and various herbs were employed to treat a range of ailments.

Middle Ages: During the Middle Ages, monasteries and herbalists continued to preserve and document knowledge about the medicinal properties of plants. Herbal remedies were widely used for healing purposes.

19th Century: The development of modern chemistry led to the isolation and identification of active compounds in plants, laying the groundwork for the pharmaceutical industry. However, interest in natural remedies persisted, with scientists exploring the potential health benefits of vitamins and minerals.

20th Century: The term "nutraceutical" was coined in the late 20th century by Dr. Stephen DeFelice to describe foods or food components that provide medical or health benefits, including the prevention and

treatment of disease. This era saw the rise of dietary supplements, fortified foods, and functional foods designed to improve health and well-being.

21st Century: The nutraceutical industry has experienced significant growth in the 21st century, driven by consumer demand for natural and alternative health solutions. Research continues to explore the potential health-promoting properties of various nutraceuticals, ranging from antioxidants and probiotics to herbal extracts and omega-3 fatty acids.

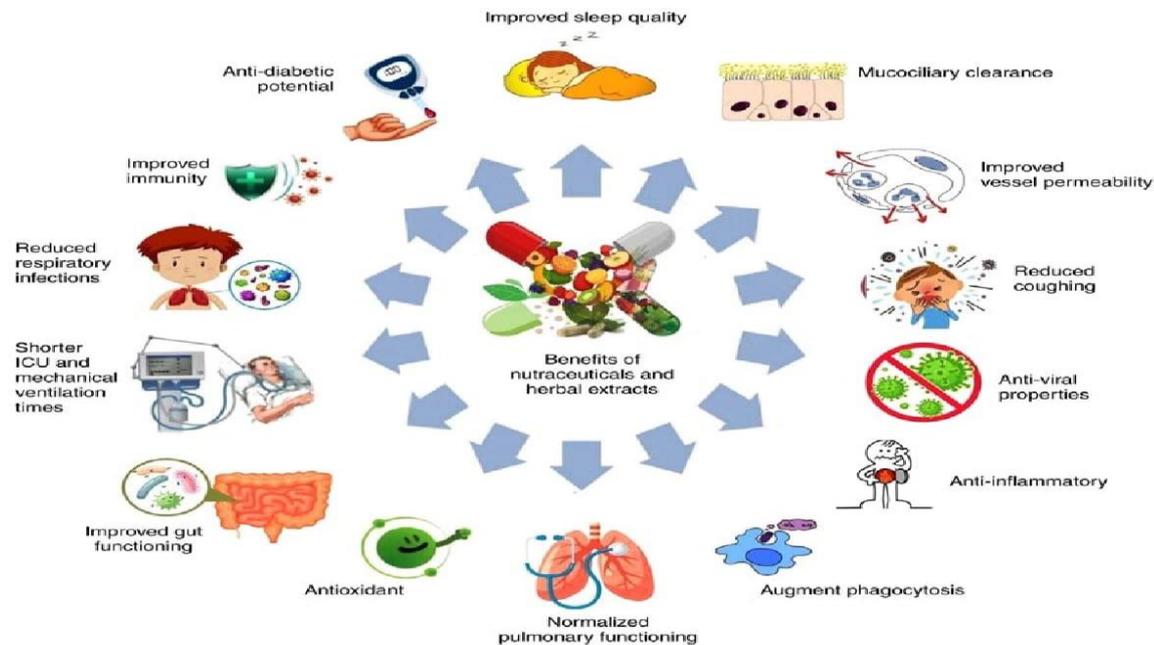
Today, nutraceuticals represent a diverse and expanding market, with ongoing scientific research aimed at validating their efficacy, safety, and potential applications in preventive and therapeutic medicine.

● FUTURE SCOPE:

The scope for nutraceuticals is vast and continually expanding, encompassing various areas of health and wellness. Here's an overview of the scope for nutraceuticals:

- **Health Promotion and Disease Prevention:** Nutraceuticals are often used to support overall health and well-being, helping to prevent chronic diseases such as cardiovascular disease, diabetes, and cancer. They can also play a role in enhancing immune function and reducing the risk of infections.
- **Nutritional Supplements:** Nutraceuticals serve as dietary supplements, providing essential vitamins, minerals, and other nutrients that may be lacking in the diet. They can help address nutritional deficiencies and support optimal health.
- **Functional Foods:** Functional foods are products that have been fortified or enriched with bioactive compounds, such as probiotics, prebiotics, antioxidants, and phytonutrients. These foods offer additional health benefits beyond basic nutrition.
- **Sports Nutrition:** Nutraceuticals are widely used in sports nutrition to enhance athletic performance, improve recovery, and support muscle growth and endurance. Ingredients like protein powders, amino acids, and creatine are popular among athletes and fitness enthusiasts.
- **Skin and Beauty:** Nutraceuticals are increasingly being incorporated into skincare and beauty products due to their potential anti-aging, antioxidant, and anti-inflammatory properties. Ingredients like collagen, vitamins, and botanical extracts are commonly used in these formulations.
- **Weight Management:** Nutraceuticals are utilized in weight management products and programs to support healthy metabolism, appetite control, and fat loss. Ingredients like green tea extract, fiber, and thermogenic compounds are commonly found in weight loss supplements.
- **Anti-inflammatory and Pain Management:** Certain nutraceuticals have anti-inflammatory properties and may help alleviate pain and discomfort associated with conditions like arthritis and other inflammatory diseases.

• BENEFITS OF NUTRACEUTICALS:



Nutraceutical benefits are unlimited, and new uses are being investigated every day. From physiological to psychological health, nutraceuticals can treat many illnesses and ailments. Choose Nutraceuticals from reliable Nutraceutical Manufacturers in India to get the below-listed benefits:

I. Boost energy

There are different types of nutraceuticals, which actually help us boost our energy, just like all the vitamins, primarily from the Vitamin B group. Additionally, the Vitamin D group helps you stay active.

II. Improve overall health

Nutraceuticals aid in improving our overall health. As discussed before that how a balanced diet helps improve our health. It adds nutritional value to our bodies and helps in improving both mental and physical health.

III. Improve Eye Health: Patients with eye disorders and conditions such as age-related glaucoma, macular degeneration, and visual disorders can benefit from certain nutraceuticals

IV. Treat Inflammation

Nutraceuticals are showing promising outcomes in the prevention and treatment of inflammation because of the presence of phytochemicals. They can decrease oxidative stress in chronic inflammatory diseases such as osteoarthritis, asthma, rheumatoid arthritis, cancer, and autoimmune diseases.

V. Relieve Anxiety

Certain vitamins like vitamin D have a very major role in establishing our mood. Vitamin B definitely is also associated with an increased risk of depression and anxiety. Vitamin B2 or riboflavin is a very important vitamin mostly found in meat.

VI. Prevent chronic diseases

Nutraceuticals play a vital role in preventing the onset of chronic diseases and reducing the complications involved. Evidence suggests they are used to prevent and treat cardiovascular diseases, cancer, diabetes, obesity, and inflammatory-based diseases.

VII. Support and regulate bodily functions

Nutraceuticals can additionally play a significant role in the body's biological processes and immune status. These include:

Protection of mitochondrial integrity

Antioxidant defense

Gene expression

Cell proliferation

Nutraceuticals can help our bodies thrive and prevent disease by playing a role in these biological processes.

▪ ADVANTAGES:

Nutraceuticals offer several advantages, making them a popular choice for individuals looking to improve their health and well-being. Here are some of the key advantages of nutraceuticals:

1. Health Promotion and Disease Prevention.
2. Low Risk of Side Effects.
3. Promotes Long-Term Wellness.
4. Improve function of immune system.
5. Enhance athletic performance.

▪ DISADVANTAGES:

While nutraceuticals offer several advantages, there are also some potential disadvantages and considerations to be aware of. Here are some of the key disadvantages of nutraceuticals:

1. Lack of Regulation and Quality Control.
2. Overuse or Misuse.
3. Cost Considerations.
4. High-cost equipment.

❖ **AIM:****TO PREPARE AND EVALUATE PROTEIN POWDER****(For Weight Gain)**❖ **OBJECTIVE:**

To creating a convenient and versatile source of protein for supplementing dietary needs, supporting muscle growth and repair, enhancing athletic performance, and promoting overall health and wellness.

❖ **PLAN OF WORK:**

Creating a plan for formulating a nutraceutical protein powder involves several steps:

- **Market Research:** Understand consumer needs and trends in the nutraceutical protein powder market.
- **Identify Target Audience:** Determine the demographic and lifestyle characteristics of your target consumers.
- **Define Objectives:** Clearly outline the goals of the protein powder formulation, such as muscle building, weight management, or general health support.
- **Select Ingredients:** Choose high-quality protein sources (e.g., whey, casein, soy, pea), flavorings, sweeteners, and any additional nutraceutical additives (e.g., vitamins, minerals, antioxidants).
- **Formulation Development:** Experiment with different ingredient ratios and formulations to achieve desired taste, texture, and nutritional profile.

- **Quality Control:** Establish strict quality control measures to ensure consistency and safety of the product.
- **Packaging Design:** Create packaging that appeals to your target audience and effectively communicates the product's benefits and features.
- **Testing and Evaluation:** Conduct sensory testing and nutritional analysis to assess the product's acceptability and effectiveness.

❖ MATERIAS & EQUIPMENTS:

• **Ingredients:**

Soya Chunks, Chana, Peanuts, Almonds, Lotus seed, Dried Dates, Candy sugar, Ashwagandha powder, Shatavari powder, Dried Ginger Powder.

• **Flavour:** Chocolate (Coca).

• **Equipments:**

Weighing balance, mortal & pestle, burner, petri plates, sieves no. 40 & 80,

Grinder mixer, spatula etc.



• INFORMATION ABOUT INGREDIENTS:

1) **Soya chunks:**



Fig.: soya chunks

Soy protein isolate, often referred to as soy protein "chunk," is a popular plant-based protein source that has gained attention for its potential health benefits and use as a nutraceutical ingredient. Here's some information about soy protein isolate as a nutraceutical:

- **Protein Content:** Soy protein isolate is a high-quality protein source, containing all essential amino acids required by the human body. It is often used in protein supplements, bars, and fortified foods.
- **Heart Health:** Consuming soy protein isolate has been associated with beneficial effects on heart health, including lowering LDL cholesterol levels. The FDA has approved a health claim stating that consuming 25 grams of soy protein per day, as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease.
- **Bone Health:** Soy protein isolate contains isoflavones, phytoestrogens that may help support bone health and reduce the risk of osteoporosis, particularly in postmenopausal women.
- **Muscle recovery:** Due to its high protein content and amino acid profile, soy protein isolate can support muscle repair and recovery, making it a popular choice among athletes and fitness enthusiasts.
- **Digestibility:** Some people may find soy protein isolate easier to digest compared to other protein sources, although individual tolerance can vary.

2) Roasted chana:



Fig.: roasted chana

Roasted chana, also known as ‘roasted chickpeas or gram’, is a popular snack in many cultures and can also be considered a nutraceutical due to its nutritional benefits. Here's some information about roasted chana as a nutraceutical:

- **Protein Content:** Roasted chana is a good source of plant-based protein, making it an excellent option for vegetarians and vegans. Protein is essential for muscle building, repair, and overall health.
- **Fiber:** Chickpeas are high in dietary fiber, which can help promote digestive health, regulate blood sugar levels, and support heart health. A diet rich in fiber can also aid in weight management by promoting feelings of fullness.
- **Minerals:** Roasted chana is a good source of essential minerals like iron, magnesium, phosphorus, and zinc. These minerals play vital roles in various bodily functions, including energy production, bone health, and immune system functions.
- **Low Glycemic Index:** Chickpeas have a low glycemic index, which means they cause a slower rise in blood sugar levels compared to high-glycemic foods. This can be beneficial for maintaining stable blood sugar levels and may reduce the risk of type 2 diabetes.
- **Antioxidants:** Chickpeas contain antioxidants, including polyphenols and flavonoids, which have anti-inflammatory and immune-boosting properties. Antioxidants help protect cells from damage caused by free radicals and oxidative stress.

3) Peanuts:



Fig.: peanuts

Peanuts are a popular and nutritious food that can also be considered a nutraceutical due to their health-promoting properties. Here's some information about peanuts as a nutraceutical:

- **Nutrient-Rich:** Peanuts are packed with essential nutrients, including protein, healthy fats, fiber, vitamins, and minerals. They are a good source of biotin, copper, niacin, folate, manganese, vitamin E, and phosphorus.
- **Heart Health:** Consuming peanuts and peanut products have been associated with lower risks of heart disease. They contain monounsaturated and polyunsaturated fats, including omega-6 fatty acids, which can help reduce LDL cholesterol levels and improve heart health.
- **Antioxidants:** Peanuts are rich in antioxidants, including resveratrol, phenolic acids, and flavonoids.
- **Blood Sugar Control:** Despite their relatively high carbohydrate content, peanuts have a low glycemic index, meaning they cause a slower rise in blood sugar levels compared to high-glycemic foods. This can be beneficial for blood sugar control and may reduce the risk of type 2 diabetes.
- **Brain Health:** Peanuts contain several nutrients that are important for brain health, including vitamin E, niacin, folate, and resveratrol. These compounds may help support cognitive function and reduce the risk of age-related cognitive decline.

4) Almonds:



Fig.: Almonds

Almonds are nutrient-dense nuts that offer a range of health benefits, making them a popular choice as a nutraceutical ingredient. Here's some information about almonds as a nutraceutical:

- **Nutrient Profile:** Almonds are rich in essential nutrients, including protein, healthy fats, fiber, vitamins, and minerals. They are an excellent source of vitamin E, magnesium, manganese, and biotin.
- **Heart Health:** Consuming almonds has been linked to improved heart health due to their content of monounsaturated fats, fiber, and antioxidants. Regular almond consumption may help reduce LDL cholesterol levels, lower blood pressure, and decrease inflammation, all of which contribute to heart disease risk reduction.
- **Blood Sugar Control:** Almonds have a low glycemic index, meaning they cause a slower rise in blood sugar levels compared to high-glycemic foods. This can be beneficial for blood sugar control and may reduce the risk of type 2 diabetes.
- **Weight Management:** Despite being calorie-dense, almonds can be a satisfying snack that helps promote feelings of fullness and reduce overall calorie intake. The combination of protein, healthy fats, and fiber in almonds can support weight management when consumed in moderation.
- **Bone Health:** Almonds are a good source of calcium and magnesium, essential minerals for bone health. Adequate intake of these minerals can help support bone density and reduce the risk of osteoporosis.

5) Lotus seed:



Fig.: Lotus seed

Lotus seeds, also known as 'lotus nuts or makhana', are the seeds of the lotus flower and have been consumed for centuries in Asian cuisine and traditional medicine. Here's some information about lotus seeds as a nutraceutical:

- **Nutrient-Rich:** Lotus seeds are a good source of protein, fiber, magnesium, potassium, and phosphorus. They are also low in calories and fat, making them a nutritious snack or ingredient in various dishes.
- **Anti-Aging Properties:** Lotus seeds contain kaempferol, a flavonoid with antioxidant properties that help neutralize free radicals and reduce oxidative stress. Regular consumption of lotus seeds may help slow down the aging process and promote skin health.
- **Heart Health:** Lotus seeds are low in sodium and high in potassium, which can help regulate blood pressure and reduce the risk of cardiovascular diseases. The magnesium content in lotus seeds also supports heart health by promoting normal heart rhythm and muscle function.
- **Digestive Health:** The fiber content in lotus seeds promotes digestive health by supporting regular bowel movements and aiding in the prevention of constipation.

6) Ashwagandha:



Fig.: Ashwagandha

- Ashwagandha is often included in protein supplements for its potential to support muscle recovery and reduce stress.
- It's an adaptogenic herb that's been used in Ayurvedic medicine for centuries. Studies suggest it may improve strength and muscle mass, reduce inflammation, and enhance overall physical performance.
- Always check the ingredients and dosage to ensure it aligns with your health goals and consult with a healthcare professional if needed.

7) Dried Dates:



Fig.: Dried Date

Dried dates are the dehydrated form of the fruit of the date palm tree (Phoenix dactylifera) and have been consumed for thousands of years due to their sweet taste and numerous health benefits.

Dried dates are nutrient rich having digestive health as well as heart health. It is also used as energy booster. And it promotes bone health.

8) Candy sugar:



Fig.: Candy Sugar

Candy sugar, also known as ‘rock candy or crystallized sugar’, is a type of sugar made by crystallizing sugar syrup. While candy sugar is primarily used as a sweetener in various culinary applications and beverages, it does not offer significant health benefits like other nutraceuticals.

Candy sugar is beneficial for kidney related problems. It is also used as sweetening beverages as well as it is used in sour throat.

9) Shatavari:



Fig.: Shatavari

Shatavari, also known as ‘Asparagus racemosus’, is a popular herb in Ayurveda known for its various health benefits, especially for women's reproductive health. When used in protein powder supplements, it's often included for its purported ability to support hormonal balance, improve digestion, and boost immunity.

10) Dried ginger powder:



Fig.: Dried ginger powder

Dry ginger powder, also known as 'ground ginger or ginger powder', is made from dried ginger root and has been used for its medicinal properties and culinary uses for centuries.

11) Chocolate (cocoa):



Fig.: chocolate (cocoa)

Chocolate is a popular flavoring agent used in various nutraceutical products due to its delicious taste and the appeal it adds to supplements and functional foods.

Enhanced Taste: Chocolate flavor enhances the taste of nutraceutical products, making them more palatable and enjoyable for consumers. This can improve compliance and adherence to supplement regimens, encouraging regular consumption.

❖ **EXPERIMENTAL WORK:**• **FORMULATION TABLE:**

Sr. no.	Ingredients	Quantity (gm)	Uses
1	Soya chunks	40 gm	Rich protein source, Improves digestion.
2	Roasted chana	30gm	Energy booster, improves hemoglobin.
3	Almonds	35gm	Blood sugar control, bone health.
4	Peanuts	20gm	Healthy for heart.
5	Lotus seed	35gm	Anti-aging property, good for hair, relives stress.
6	Ashwagandha	10gm	Anti-inflammatory, boost immunity, cardioprotective.
7	Shatavari	10gm	Improves fertility, boost immunity, beneficial for pregnant women.
8	Candy sugar	05gm	Energy booster, kidney protective.
9	Dried dates powder	35gm	Anti diabetic, anti-inflammatory.
10	Dried ginger powder	½ tsp	Anti-inflammatory.
11	Chocolate(cocoa)	25gm	Flavouring agent.

- **Method of preparation:**

- **Step 1:** Firstly, weigh accurately all ingredients required for protein powder formulation.
- **Step2:** Then slightly dry roasted all ingredients one by one for 3 to 4 min.
- **Step3:** A grinder was taken for grind the ingredients well, firstly all ingredients were grinded one by one.
- **Step4:** After that all ingredients were mixed in one container.
- **Step5:** Then ashwagandha and shatavari powder was added in that mixture; as well as dried ginger powder added in it.
- **Step6:** cocoa powder/chocolate powder was added in that mixture as a flavoring agent to improve the test of protein powder and mixed well.
- **Step7:** Final mixture was weighed and transferred in a air tight and well closed container (bottle)
- **Step8:** For better result enjoy it with milk, or water.

HOW TO USE PROTEIN POWDER

PURE PROTEIN BOOST

MEAL REPLACEMENT



Protein powder
+
Water



Protein powder
+
Food you're already
eating



Protein powder
+
Milk of choice



Protein powder
+
Milk of choice
+
Fruit



Protein powder
+
Milk of choice
+
Vegetable
+
Fruit
+
Healthy fat

- **FORMULATION IMAGE:**



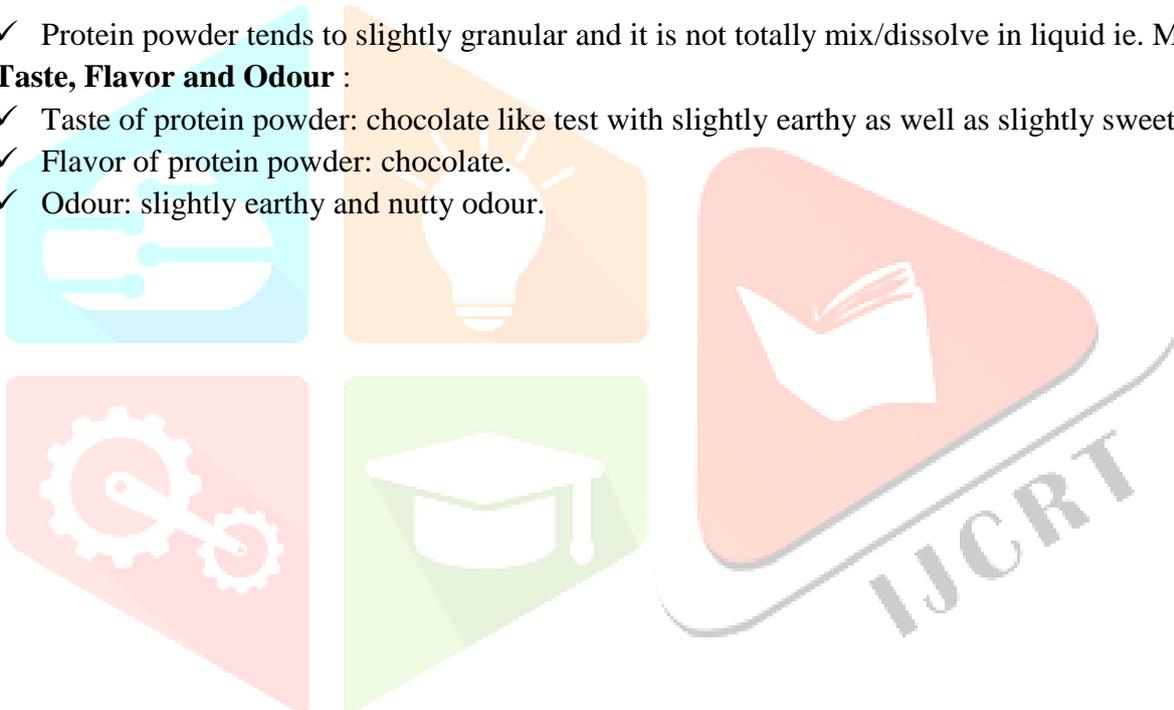
Figure

Formulation: SHVETNI's Protein Powder.

- **Evaluation:**

When evaluating protein powder, several key factors should be considered to assess its quality, efficacy, safety, and suitability for individual needs. Here are some aspects to evaluate:

- 1. Protein Content and Quality:** Add 2ml of sodium hydroxide and 5 to 6 drops of copper sulfate solution to it.
 - ✓ Shake the test tube gently to mix the ingredients thoroughly and allow the mixture to stand for 4 – 5 minutes.
 - ✓ If there is the appearance of bluish- violet color, it indicates the presence of protein.
- 2. Ingredients and Additives:** Review the ingredient list to identify any artificial flavors, sweeteners, colors, or preservatives.
 - ✓ Choose protein powders with minimal additives and ingredients that align with your dietary preferences and restrictions.
 - ✓ Look for products that are free from allergens or ingredients you may be sensitive to.
- 3. Nutritional Profile:** Evaluate the nutritional profile of the protein powder, including macronutrient content (protein, carbohydrates, fats), micronutrient content (vitamins, minerals), and calorie count per serving. Consider the overall balance of nutrients and how it fits into your daily dietary intake.
- 4. Mixability (Dissolution) and Texture:** To Assess the mixability and texture of the protein powder when mixed with water, milk, or other liquids.
 - ✓ Protein powder tends to be slightly granular and it does not totally mix/dissolve in liquid ie. Milk/water.
- 5. Taste, Flavor and Odour :**
 - ✓ Taste of protein powder: chocolate like test with slightly earthy as well as slightly sweet.
 - ✓ Flavor of protein powder: chocolate.
 - ✓ Odour: slightly earthy and nutty odour.





Color: light brownish



Texture: slightly granular



Dissolution in milk



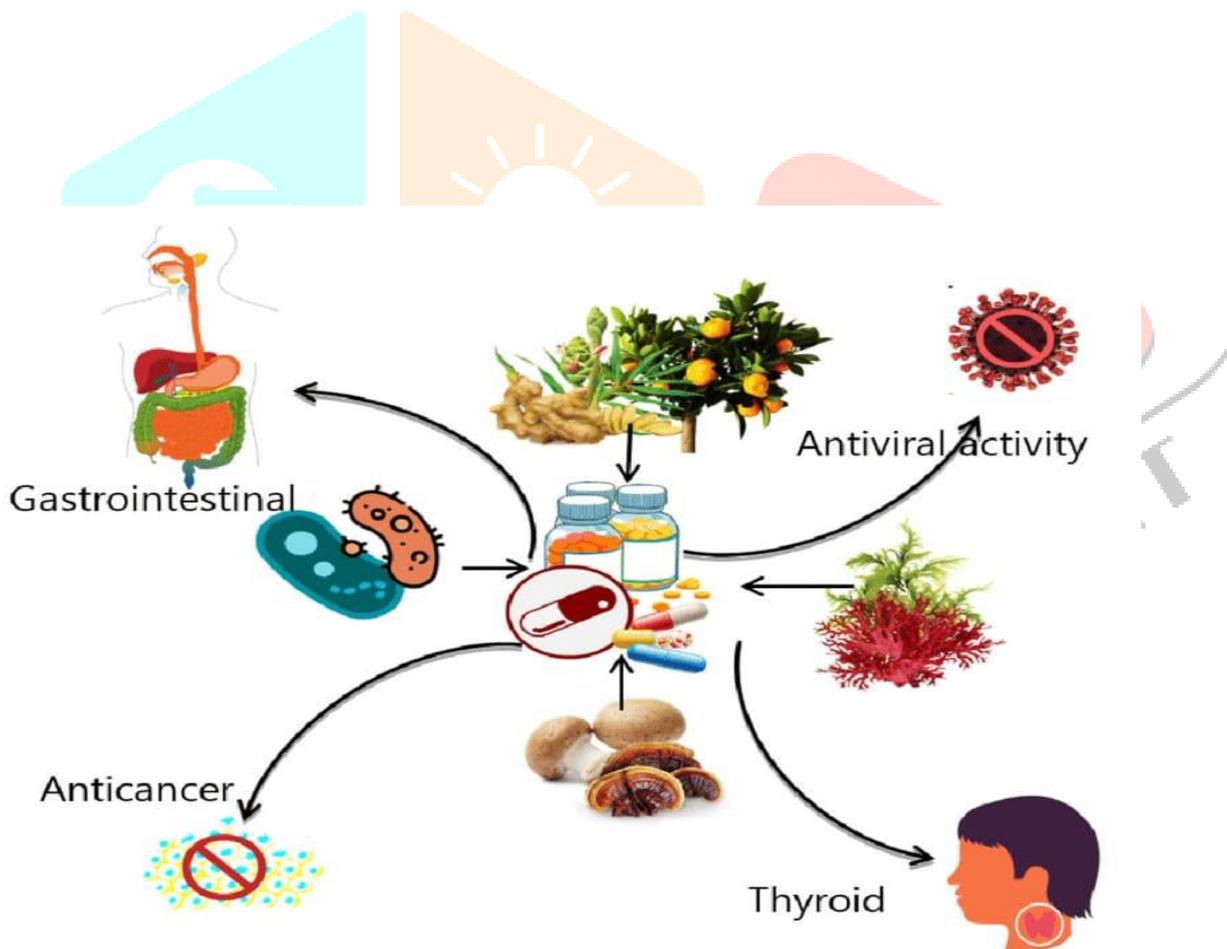
Dissolution in water

• Uses of protein powder:

This Protein powder is used for weight gain for all age group person, as well as both male and female. It is also beneficial for pregnant women.

➤ Here are some common uses of protein powder:

- Muscle Building and Recovery.
- Weight Management and Appetite Control.
- Convenient Protein Source.
- Dietary Supplementation.
- Meal Replacement.
- Bone Health and Aging.
- Enhanced Athletic Performance.



• **LABEL:**

Nutritional fact:
 Energy – 130 cal.
 Protein rich
 Vitamins 160mg
 fats 1.40g
 carbohydrates 6.6g
 sodium
 Minerals 3.8g
 sugar 5.9g
 Dietary fibers 1.5g
 other nutrients.

Useful for any Age Group

SHVETNI'S
PROTEIN POWDER FOR WEIGHT GAIN
CHOCOLATE FLAVOUR 250gm

Serving size - 1 scoop (25gm) Serving per container - 10

- BEST FOR -

- pregnant women
- Breast feeding women
- For children's physical growth & improves brain function
- Increase appetite of children, men, women as well as old age people.

Directions for Use

- Storage -
 keep it in cool & dry place,
 keep in air tight & well closed container.

- Cautions -
 If any medical condition;
 consult dietician before taking it.

Mfg By -
Gurukrupa Institute of Pharmacy,
 Majalgaon, Dist. Beed, Maharashtra 431131.

Batch No. : B73GIP
Mfg license. No. : GIP123SS
Mfg date : 25-April-2024
Expiry : use before 30 days
 (after opening the seal)
Dosage : 1 scoop/ day

MRP : 99 Rs.

❖ **RESULT:**

The study of Nutraceuticals & The formulation and evaluation of protein powder were done successfully.

❖ **SUMMARY:**

- Nutraceutical protein powder supplementation involves using protein supplements derived from natural sources to enhance overall health and well-being. These supplements are often used by athletes and fitness enthusiasts to support muscle growth, recovery, and overall performance.
- The key benefits include increased protein intake, improved muscle repair and growth, enhanced exercise performance, and support for weight management. However, it's essential to choose high-quality products and consult with a healthcare professional before starting any supplementation regimen.
- They are popular among athletes, fitness enthusiasts, and individuals seeking to enhance their nutrition. However, it's essential to choose products wisely, considering factors like ingredients, quality, and individual health goals.

❖ CONCLUSION:

The study investigated the efficacy, safety, and consumer perceptions of protein powder supplementation.

Overall, the findings of this research contribute to our understanding of protein powder supplementation and provide evidence-based recommendations for consumers, healthcare professionals, and industry stakeholders. By addressing the efficacy, safety, and consumer preferences of protein powder products, this study aims to support informed decision-making and promote optimal health and wellness outcomes.

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