

NUTREASE POWDER - Nature's Blend of Dietary Protein Nutrients to Maintain Optimum Health in PCOS Disease

Research Article

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INTRODUCTION

Generally, Polycystic ovary syndrome (PCOS) refers to a set of symptoms due to elevated androgens (male hormones) in females. Signs and symptoms of

PCOS include irregular or no menstrual periods, heavy periods, excess body and facial hair, acne, pelvic pain, difficulty getting pregnant, and patches of thick, darker, velvety skin.^[1-3] Associated conditions include type 2 diabetes, obesity, obstructive sleep apnea, heart disease, mood disorders, and endometrial cancer.^[4]

Abstract: Polycystic ovary syndrome (PCOS) is a disorder characterized by hormonal imbalance, irregular menstrual periods, excess hair growth, and obesity. Women with PCOS typically have numerous cysts on the ovaries. PCOS is the most common hormonal disorder among women of reproductive age, affecting an estimated 5–10 percent of Indian population. In PCOS, the body produces an excess amount of androgens, and the ratio of luteinizing hormone to follicle-stimulating hormone is abnormally high. Ovulation occurs less frequently, or the ovaries don't release eggs at all. In the absence of ovulation, the menstrual cycle is irregular or absent, and cysts containing the immature eggs form on the ovaries. This causes the ovaries to enlarge. Research suggests that PCOS may result from excess insulin, which boosts male hormone production (androgens), leading to menstrual cycle disturbances, acne, and coarse hair growth. Genetic factors may also be at play since this occurs more commonly in those with a family history. Early diagnosis and treatment of PCOS is important to improving quality of life and reducing the risk of long-term complications, such as diabetes and heart disease. Research Studies concluded that an increase in dietary protein to be beneficial for managing PCOS, it must be accompanied by a relatively lower intake of carbohydrates appears to be effective in improving hormonal disturbances of PCOS. The present paper Reviews the Role of Nutrease powder developed by R&D cell of Lactonova Nutripharm Pvt Ltd. Hyderabad in hormonal disturbances of PCOS to regulate menstrual cycles and to improve ovulation, Restores fertility, regulates menstruation cycle.

Keywords: Nutrease Powder, Ovulation, Hormonal disturbances, PCOS.

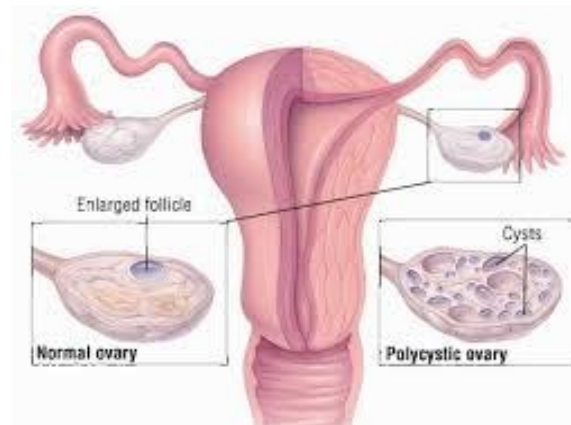
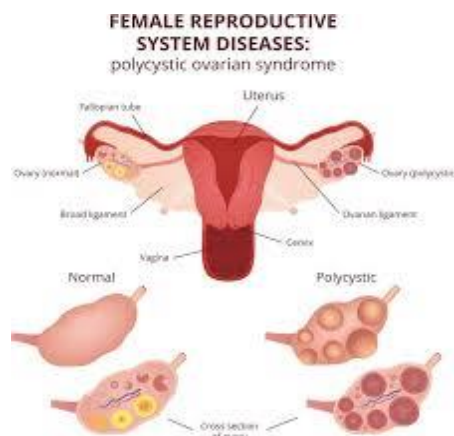


Fig.1 Female Reproductive system showing polycystic ovaries

PCOS is due to a combination of genetic and environmental factors.^{[6][7][15]} Risk factors include obesity, not enough physical exercise, and a family history of someone with the condition.^[8] Diagnosis is based on two of the following three findings: no ovulation, high androgen levels, and ovarian cysts.^[4] Cysts may be detectable by ultrasound.^[9] Other conditions that produce similar symptoms include adrenal hyperplasia, hypothyroidism, and hyperprolactinemia.^[9]

PCOS has no cure.^[5] Treatment may involve lifestyle changes such as weight loss and exercise.^{[10][11]} Birth control pills may help with improving the regularity of periods, excess hair growth, and acne.^[12] Metformin and anti-androgens may also help.^[12] Other typical acne treatments and hair removal techniques may be used.^[12] Efforts to improve fertility include weight loss, clomiphene, or metformin.^[16] In vitro fertilization is used by some in whom other measures are not effective.^[16]

PCOS is the most common endocrine disorder among women between the ages of 18 and 44.^[17] It affects approximately 2% to 20% of this age group depending on how it is defined.^{[8][13]} It is one of the leading causes of poor fertility.^[4] The earliest known description of what is now recognized as PCOS dates from 1721 in Italy.^[18]

Common signs and symptoms of PCOS include the following:

- ✦ **Menstrual disorders:** PCOS mostly produces oligomenorrhea (fewer than nine menstrual periods in a year) or amenorrhea (no menstrual periods for three or more consecutive months), but other types of menstrual disorders may also occur.^[17]
- ✦ **Infertility:** This results directly from chronic anovulation (lack of ovulation).^[17]
- ✦ **High levels of masculinizing hormones:** Known as hyperandrogenism, the most common signs are acne and hirsutism (male pattern of hair growth, such as on the chin or chest), but it may produce hypermenorrhea (heavy and prolonged menstrual periods), androgenic alopecia (increased hair thinning or diffuse hair loss), or other symptoms.^{[17][19]} Approximately three-quarters of women with PCOS (by the diagnostic criteria of NIH/NICHD 1990) have evidence of hyperandrogenemia.^[20]
- ✦ **Metabolic syndrome:** This appears as a tendency towards central obesity and other symptoms associated with insulin resistance.^[17] Serum insulin, insulin resistance, and homocysteine levels are higher in women with PCOS.^[21]

Causes of PCOS

PCOS is a heterogeneous disorder of uncertain cause.^{[23][24]} There is some evidence that it is a genetic disease. Such evidence includes the familial clustering of cases,

greater concordance in monozygotic compared with dizygotic twins and heritability of endocrine and metabolic features of PCOS.^{[7][23][24]} There is some evidence that exposure to higher than typical levels of androgens in utero increases the risk of developing PCOS in later life.^[25]

The genetic component appears to be inherited in an autosomal dominant fashion with high genetic penetrance but variable expressivity in females; this means that each child has a 50% chance of inheriting the predisposing genetic variant(s) from a parent, and, if a daughter receives the variant(s), the daughter will have the disease to some extent.^{[24][26][27][28]} The genetic variant(s) can be inherited from either the father or the mother, and can be passed along to both sons (who may be asymptomatic carriers or may have symptoms such as early baldness and/or excessive hair) and daughters, who will show signs of PCOS.^{[26][28]} The phenotype appears to manifest itself at least partially via heightened androgen levels secreted by ovarian follicle theca cells from women with the allele.^[27] The exact gene affected has not yet been identified.^{[7][24][29]} In rare instances, single-gene mutations can give rise to the phenotype of the syndrome.^[30] Current understanding of the pathogenesis of the syndrome suggests, however, that it is a complex multigenic disorder.^[31]

The severity of PCOS symptoms appears to be largely determined by factors such as obesity.^{[7][17][32]}

PCOS has some aspects of a metabolic disorder, since its symptoms are partly reversible. Even though considered as a gynecological problem, PCOS consists of 28 clinical symptoms. Even though the name suggests that the ovaries are central to disease pathology, cysts are a symptom instead of the cause of the disease. Some symptoms of PCOS will persist even if both ovaries are removed; the disease can appear even if cysts are absent. Since its first description by Stein and Leventhal in 1935, the criteria of diagnosis, symptoms, and causative factors are subject to debate. Gynecologists often see it as a gynecological problem, with the ovaries being the primary organ affected. However, recent insights show a multisystem disorder, with the primary problem lying in hormonal regulation in the hypothalamus, with the involvement of many organs. The name PCOD is used when there is ultrasonographic evidence. The term PCOS is used since there is a wide spectrum of symptoms possible, and cysts in the ovaries are seen only in 15% of people.^[33]

PCOS may be related to or worsened by exposures during the prenatal period, epigenetic factors, environmental impacts (especially industrial endocrine disruptors^[34] such as bisphenol A and certain drugs) and the increasing rates of obesity.^[34]

Pathogenesis of PCOS

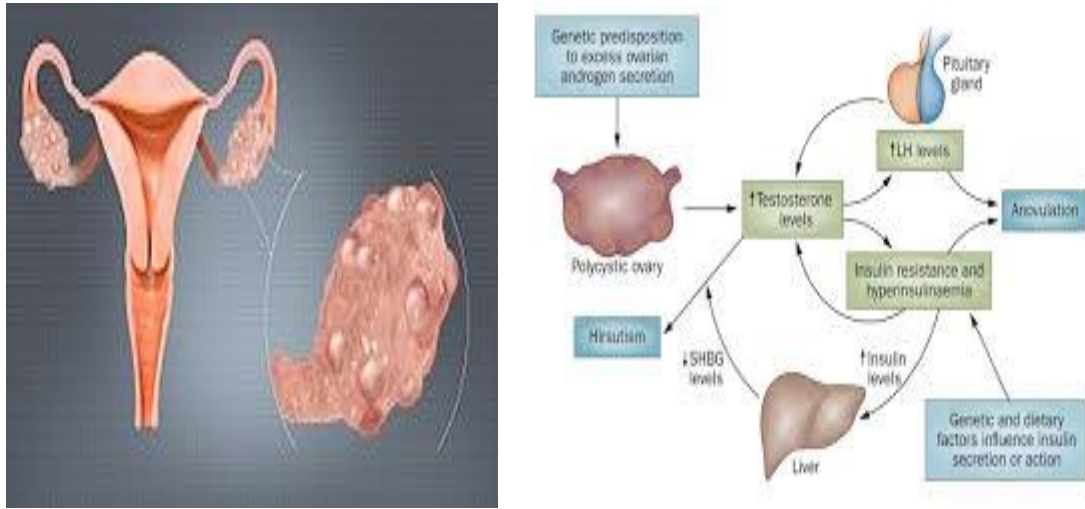


Fig.2 Pathogenesis of PCOS

Polycystic ovaries develop when the ovaries are stimulated to produce excessive amounts of androgenic hormones, in particular testosterone, by either one or a combination of the following (almost certainly combined with genetic susceptibility^[27]):

- the release of excessive luteinizing hormone (LH) by the anterior pituitary gland
- through high levels of insulin in the blood (hyperinsulinaemia) in women whose ovaries are sensitive to this stimulus

The syndrome acquired its most widely used name due to the common sign on ultrasound examination of multiple (poly) ovarian cysts. These "cysts" are actually immature follicles not cysts. The follicles have developed from primordial follicles, but the development has stopped ("arrested") at an early antral stage due to the disturbed ovarian function. The follicles may be oriented along the ovarian periphery, appearing as a 'string of pearls' on ultrasound examination.

Women with PCOS experience an increased frequency of hypothalamic GnRH pulses, which in turn results in an increase in the LH/FSH ratio.^[41]

A majority of women with PCOS have insulin resistance and/or are obese. Their elevated insulin levels contribute to or cause the abnormalities seen in the hypothalamic-pituitary-ovarian axis that lead to PCOS. Hyperinsulinemia increases GnRH pulse frequency, LH over FSH dominance, increased ovarian androgen production, decreased follicular maturation, and decreased SHBG binding. Furthermore, excessive insulin, acting through its cognate receptor in the presence of component cAMP signaling, up regulates 17 α -hydroxylase activity via PI3K, 17 α -hydroxylase activity being

responsible for synthesizing androgen precursors. The combined effects of hyperinsulinemia contribute to an increased risk of PCOS.^[42] Insulin resistance is a common finding among women with a normal weight as well as overweight women.^{[10][17][21]}

Adipose tissue possesses aromatase, an enzyme that converts androstenedione to estrone and testosterone to estradiol. The excess of adipose tissue in obese women creates the paradox of having both excess androgens (which are responsible for hirsutism and virilization) and estrogens (which inhibits FSH via negative feedback).^[43]

PCOS may be associated with chronic inflammation,^[44] with several investigators correlating inflammatory mediators with anovulation and other PCOS symptoms.^{[45][46]} Similarly, there seems to be a relation between PCOS and increased level of oxidative stress.^[47]

It has previously been suggested that the excessive androgen production in PCOS could be caused by a decreased serum level of IGFBP-1, in turn increasing the level of free IGF-I, which stimulates ovarian androgen production, but recent data concludes this mechanism to be unlikely.^[48]

PCOS has also been associated with a specific FMR1 sub-genotype. The research suggests that women with heterozygous-normal/low FMR1 have polycystic-like symptoms of excessive follicle-activity and hyperactive ovarian function.^[49]

Management of PCOS

The primary treatments for PCOS include: lifestyle changes and medications.

Goals of treatment may be considered under four categories:

- Lowering of insulin resistance levels
- Restoration of fertility
- Treatment of hirsutism or acne
- Restoration of regular menstruation, and prevention of endometrial hyperplasia and endometrial cancer

In each of these areas, there is considerable debate as to the optimal treatment. One of the major reasons for this is the lack of large-scale clinical trials comparing different treatments. Smaller trials tend to be less reliable and hence may produce conflicting results. General interventions that help to reduce weight or insulin resistance can be beneficial for all these aims, because they address what is believed to be the underlying cause.

As PCOS appears to cause significant emotional distress, appropriate support may be useful.

Role of Diet in Management of PCOS

Where PCOS is associated with overweight or obesity, successful weight loss is the most effective method of restoring normal ovulation/menstruation, but many women find it very difficult to achieve and sustain significant weight loss. A scientific review found similar decreases in weight and body composition and improvements in pregnancy rate, menstrual regularity, ovulation, hyperandrogenism, insulin resistance, lipids, and quality of life to occur with weight loss independent of diet composition. Still, a low GI diet, in which a significant part of total carbohydrates are obtained from fruit, vegetables, and whole-grain sources, has resulted in greater menstrual regularity than a macronutrient-matched healthy diet.

Vitamin D deficiency may play some role in the development of the metabolic syndrome, so treatment of any such deficiency is indicated. A systematic review found that vitamin D supplementation reduced or mitigated metabolic and hormonal dysregulations in PCOS. Interventions using dietary supplements to correct metabolic deficiencies in people with PCOS had been tested in small, uncontrolled and nonrandomized clinical trials; the resulting data recommend their use.

For women with polycystic ovary disease (PCOS), increasing dietary protein may be a helpful strategy for preventing weight gain, prediabetes, and type 2 diabetes— all common complications of the condition.

This is because in addition to fueling the body with calories (along with carbohydrates and fats) and providing the so-called building blocks for bones, muscles, skin, and blood, protein helps facilitate digestion and metabolism and plays an integral role in the synthesis of hormones, including estrogen, testosterone, and insulin, functions that often are impaired in women with PCOS.

In order for an increase in dietary protein to be beneficial for managing PCOS, it must be accompanied by a relatively lower intake of carbohydrates and come from foods that are low in saturated fat. Getting the proportions and food sources right, ideally with the help of a dietitian, may be an effective way to stave off many of the adverse effects of PCOS.

More than half of all women with PCOS develop diabetes by age 40.

Benefits of Nutrease Natural Protein in PCOS

Clinical Research studies shows that a high-protein/low-carb diet can be beneficial in a number of ways in PCOS:

Help boost metabolism: All foods have a thermic effect, meaning they increase the rate of metabolism and the amount of calories burned. The thermic effect of protein is between 15% and 30%, far greater than that of carbohydrates (5% to 10%) or fats (0% to 3%). Eating more protein can increase the number of calories burned per day by as many as 100.

Control appetite: Protein stimulates the production of cholecystokinin, glucagon-like peptide 1, and peptide YY, hormones that are involved in satiety, helping to reign in appetite and reduce cravings.

Improve blood sugar control: All foods trigger a glycemic response in which blood sugar (glucose) levels increase. Because protein is digested slowly, its impact on blood sugar is relatively low. A 2019 study in *Diabetologia* reported that adults with type 2 diabetes who followed a high-protein diet for six weeks had reductions in both postprandial (post-eating) and fasting glucose levels.

Temper the insulin response: Protein stimulates the release of glucagon, a hormone that raises blood glucose levels and counteracts the action of insulin. The right amount of protein can help balance the levels of glucagon and insulin in the blood.

Research looking at the effects of a high-protein diet on PCOS has been promising. For example, a 2012 study from Denmark reported that women with PCOS who followed such a diet for six months lost an average of nine pounds of body fat.

Similar results were seen in a 2012 study from Iran in which 60 overweight women with PCOS who followed a diet made up of 30% protein not only lost weight but also had lower testosterone levels and improved insulin sensitivity.

Dietary Recommendations

There is evidence, to suggest that increasing the amount of protein in the diet from 15% of calories to 30% or even more than 40% may be highly beneficial in PCOS.

This is along the top end of recommendations by the Department of Health and Human Services (DHHS) that women 19 and over to get 10% to 35% or more of their daily calories from protein supplementation.

According to a 2014 study in the *Archives of Gynecology and Obstetrics*, that increasing the amount of protein in the diet from 15% of calories to 30% or even more than 40% can improve insulin sensitivity, hyperandrogenism (high testosterone), menstrual function, and fertility in women with PCOS.

Synthetic health drinks Vs Nutrease Natural Protein health drink

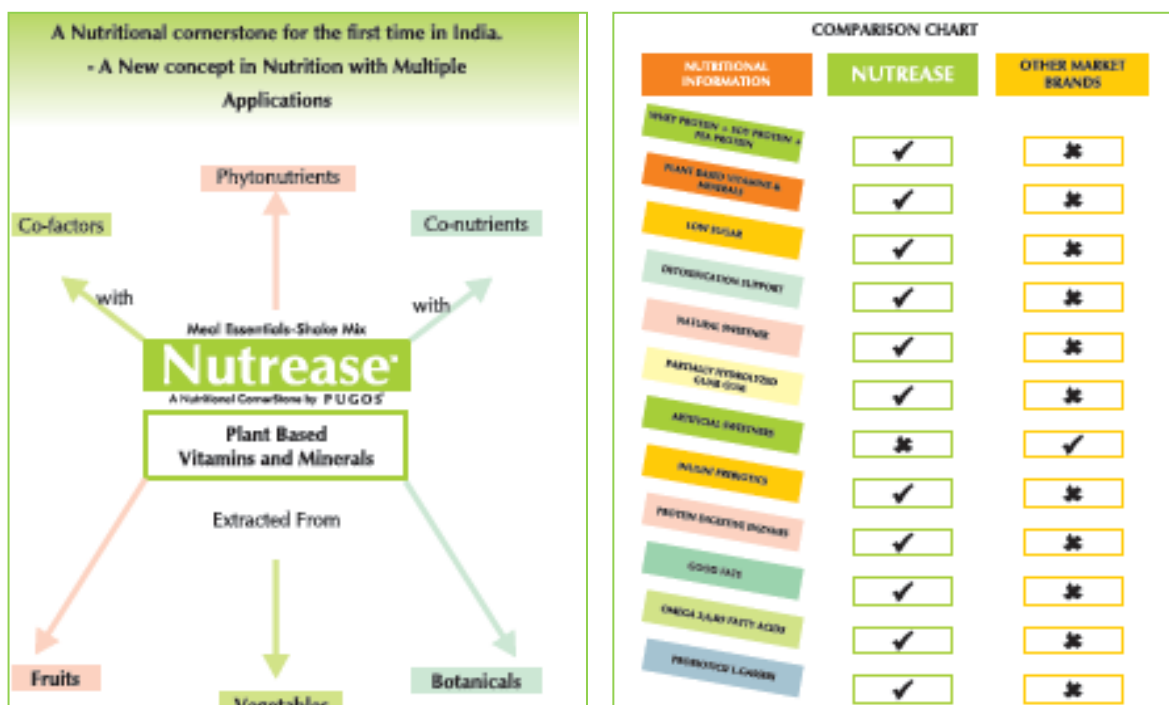
Now a days we are seeing that lot of synthetic popular health drinks are available in the market such as brand X, brand B, brand C, etc.

These Synthetic nutrients are dietary supplements made artificially in a laboratory setting or industrial process. The majority of these supplements available on the market today are made artificially. Taking large amounts of synthetic nutrients can have harmful health effects.

Results from many clinical trials shows that Synthetic health drinks can increase the risk of premature death. Other studies have linked that synthetic multivitamin in these health drinks use to increased cancer risk, and synthetic folic acid in these health drinks is harmful for our health as It build up in the body and raise the risk of cancer whereas Natural nutrients in nutrease powder contain "whole food supplements," which are made from concentrated, dehydrated whole foods.

The major nutrients present in Nutrease powder include Natural carbohydrates, proteins, lipids, vitamins, and minerals in the form of plant nutrients. They have tremendous impact on the health care system and may provide medical health benefits including the prevention and/or treatment of disease and also they are 100% safe, natural and having no side effects.

Pharmacological Action of Each Ingredients of Nutrease Powder



Composition of Nutrease Powder

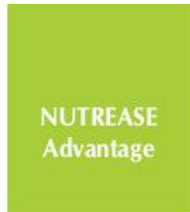
Serving Size : 30g (1 Scoop)		Serving per container : 20	
Supplement Facts	Per 100g Approx	Per 30g Approx	
Energy	349.86 Kcal	104.96 Kcal	
Protein	38.723g	11.61g	
Total Carbohydrate	53.05g	15.91g	
Dietary Fiber	22.17g	6.648g	
Sugar	6.093g	1.82g	
Total Fat	3.00g	0.902g	
Saturated Fats	2.62g	0.78g	
Mono Unsaturated Fats	0.133g	0.040g	
Poly Unsaturated Fats	0.116g	0.034g	
VITAMINS			
Vitamin A	2000IU	600IU	
Vitamin C	40mg	12mg	
Vitamin E	10mg	3mg	
Thiamine	0.075mg	0.03mg	
Riboflavin	0.05mg	0.015mg	
Niacin	0.21mg	0.063mg	
Pantothenic Acid	0.24mg	0.072mg	
Pyridoxine	0.1mg	0.03mg	
Folic Acid	0.002mg	0.0006mg	
MINERALS			
Calcium	100mg	30mg	
Iron	5mg	1.5mg	
Phosphorus	200mg	60mg	
Selenium	100mcg	30mcg	
Copper	5mg	1.5mg	
Chromium	100mcg	30mcg	
Potassium	50mg	15mg	
Sodium	50mg	15mg	
Choline	15mg	4.5mg	
Manganese	2mg	0.6mg	
Zinc	5mg	1.5mg	
Magnesium	100mg	30mg	

INGREDIENTS :

Inulin, Soya Protein Isolate, Pea Protein Isolate, Whey Powder, Cyclodextrin, Partially Hydrolyzed Guar gum, Guava Leaf Extract, Moringa Extract, Sesbania Extract, Annatto Extract, Green Tea Extract, Holy Basil Extract, Amla Extract, Lemon Peel Extract, Citrus Bioflavonoids, Flax Seed Powder, Brassica, Lactobacillus Gasseri, Papaya Fruit Latex, Pine Apple Extract, Steviol Glycosides (Rebaudioside A), Ginger Powder, Curcuminoids, Banana Leaf Extract, β -Carotene, Di Calcium Phosphate, Choline, Copper Sulphate, Manganese Sulphate, Fructose, Riboflavin, Skimmed Milk Powder, Xanthum gum, Apple Fiber, Sodium Carboxymethyl Cellulose, Mango Powder and Mango Flavor.

Mechanism of Action of Nutrease Powder

Nutrease contains standardized plant-based vitamins and minerals which include a diverse mixture of substances including dozens of closely related vitamins and phytonutrients to help potentiate insulin action and thus influence carbohydrate, lipid and protein metabolism. Targeted botanicals and antioxidants like curcuminoids, sulforaphane glucosinolate from Broccoli Extract and Ginger Extract to help regulate metabolism, stimulate digestion and to provide long-lasting cell protection from free radical damage. Probiotics and prebiotics like



Balanced Protein Mix

WHEY PROTEIN + PEA PROTEIN
+ SOY PROTEIN

Different in terms of Amino Acid Ratio, Bioavailability and their effects in repair and synthesis of muscles

WHEY PROTEIN

- ▶ Works Faster after Ingestion
- ▶ Leans the body quicker & works in shorter time
- ▶ Contains more of a fast Amino Acids Spike
- ▶ Has more sulphur, Essential Amino Acids and BCAA's
- ▶ Increases protein synthesis to a greater degree
- ▶ Meets PDCAA's Ratio 0.91 below 1

PEA PROTEIN

- ▶ Works Faster and Quick absorption after Ingestion
- ▶ Easily Digested.
- ▶ Pea protein is not slouch with regards to its digestibility.
- ▶ Helps to lose weight, builds muscle and fights heart diseases.
- ▶ Increases protein synthesis
- ▶ Dairy Free and Vegan
- ▶ Meets PDCAA's Ratio 0.89 below 1

SOY PROTEIN

- ▶ Works easy and quick absorption.
- ▶ Decreases stress on bones, increases stamina & improves blood sugar control.
- ▶ Contains fewer calories, less total fat and saturated fats.
- ▶ Has low glycemic index.
- ▶ Maintains lean muscle mass
- ▶ Meets PDCAA's Ratio of 1



Lactobacillus gasseri and Inulin to help balance intestinal flora, reduce waist circumference and reduce adipocyte size through inhibition of leptin levels.

Good fats like omega 3, 6 & 9 from Flaxseed and Medium Chain Triglycerides (MCT), help to maintain healthy levels of blood sugar and triglycerides, enhance metabolism to burn more calories. Optimum fibers like alpha cyclodextrins, partially hydrolyzed guar gum, and oat fiber to help promote intestinal regularity, to increase the satiety and improve glycemic effect of meal.

Plant enzymes like bromelain and papain for better digestion and absorption of proteins. Premium blend of Natural protein concentrate and pea protein isolate to meet the daily protein requirements and to maintain optimum health & Strength in Adults.

Meal Essentials-Shake Mix
Nutrease™
A Nutritional CornerStone by PUGOS

One and only supplement with standardized plant based Vitamins & Minerals



Figure 1. Most “natural” vitamin supplements are chemically stripped down to a single vitamer, which are more closely related to synthetic vitamins than true plant-based vitamins.

Synthetic Vitamins & Minerals

- ▶ Are made up of industrial chemicals like petroleum derivatives (hydro carbons).
- ▶ Chemical structure varies compared to Natural and plant based vitamins & minerals.
- ▶ Doesn't contain broad spectrum of closely related vitamins, minerals and phytonutrients co-factors and conutrients.
- ▶ Has failed to protect against diseases.
- ▶ Less Bioavailable.
- ▶ They are less absorbed and have more risks of Side effects.

Plant-Based Vitamins & Minerals

- ▶ Extracted from fruits vegetables, herbs, fungi and other natural sources.
- ▶ Chemical structure and chemical diversity of vitamins and phytonutrients are naturally retained.
- ▶ contains broad spectrum of closely related Vitamins, Minerals, Phytonutrients, Co-factors, and Co-nutrients.
- ▶ Has shown effective protection role against diseases.
- ▶ Bioavailability is purely high.
- ▶ Highly absorbed and have very less side effects.

Synthetic /
isolated vitamins



VS.

Broad-spectrum
plant-based vitamins



Supplement Facts

Presentation: POWDER

Usage: As a food supplement. It is a combination of Natural vitamins and minerals, Natural Antioxidant & Phyto-Nutrients. NUTREASE POWDER, The Nature's blend of protein, Fibers, plant extracts (phytochemicals) as balanced Nutrition for PCOS.

Contra-indications: Product is contra-indicated in persons with Known hypersensitivity to any component of the product hypersensitivity to any component of the product.

Recommended usage: Once or twice a day along with portion controlled nutritious meals and exercise.

One Serving (30g- 1 Scoop) provides 104 Calories, 11.61g of proteins, 6.64g of Fiber and 1.82g of Sugar per day.

“Do not exceed the recommended daily dose”.

Directions for Use: Take one level scoop (30g) with skimmed milk or water to make a cup of 200ml. Gently shake well in shaker or stir well until the powder is evenly dispersed and drink immediately.

Administration: Taken by oral route at any time with food.

Precautions: Food Supplements must not be used as a substitute for a varied and balanced diet in weight management program and in healthy lifestyle. This Product is not intended to diagnose, treat, cure or prevent any diseases. Do not exceed the recommended daily dose.

Warnings: If you are taking any prescribed medication or has any medical conditions always consults doctor or healthcare practitioner before taking this supplement.

Side Effects: Mild side effects like nausea, headache and vomiting in some individuals have been reported.

Storage: Store in a cool, dry and dark place.

Summary & Conclusion

Though supplementation of nutrients sometimes is necessary, physicians and dieticians recommend that nutrients come from Nutrease powder contains standardized plant-based vitamins and minerals which include a diverse mixture of substances including dozens of closely related vitamins and phytonutrients, not from synthetic vitamins and supplements. Excessive use of Synthetic vitamins and mineral supplements can lead to serious health problems and it is best to involve a physician to ensure that supplements are being used at appropriate and safe levels. It also is best not to change a diet without the advice of a nutritional expert or health care professional. People who are chronically ill, and women who are pregnant or *breastfeeding* only should change their diets under professional supervision.

For adults (ages eighteen to forty-five or fifty), weight management is a key factor in achieving health and wellness. In order to remain healthy, adults must be aware of changes

in their energy needs, based on their level of physical activity, and balance their energy intake accordingly.

As teenagers reach adulthood, the basal energy needs for maintaining the body's physiological functions (basal metabolic rate , or BMR) stabilize, and so energy requirements also stabilize. BMR is defined as the energy required by the body to keep functioning. These functions include the pumping of blood by the heart, respiration, kidney function, and maintaining muscle tone and a constant body temperature, among others. BMR is directly related to the amount of lean body muscle mass, size, and gender. Physical activity, especially weight-training exercises, help increase and maintain lean body mass.

It is very important to reduce one's energy intake at the onset of adulthood, and to make sure that all of one's nutritional needs are met. This can be accomplished by making sure that an adequate amount of energy is consumed (this will vary by body weight, degree of physical fitness, and muscle vs. body fat), and that this amount of energy is adjusted to one's level of physical activity. Foods that are chosen to provide the energy must be highly nutritious, containing high amounts of essential nutrients such as vitamins , minerals , and essential proteins .

It is usually at this age that young adults start gaining body fat and reducing their physical activity, resulting in an accumulation of fat in the abdominal areas. This is an ever-increasing risk factor in the population, where obesity is not only a problem in adults, but also in children. It is believed that the high level of obesity is mostly due to bad dietary practices such as eating a high-fat, low-complex carbohydrate (low fiber) diet , including excessive amounts of meat. The indulgence in fast foods and a lack of regular physical activity are major factors. Obesity is a risk factor for PCOS & other degenerative diseases, such as type II (adult onset) diabetes, diseases of heart and circulation, and certain cancers. Another nutritional problem related to eating such a diet is constipation, due to low-fiber diets. This may result in hemorrhoids, diverticulosis, appendicitis, and other more serious diseases of the lower intestine. Increasing the number of servings of fruits, vegetables, and whole grains in the diet will prevent these diseases.

At the onset of adulthood, energy requirements usually reach a plateau that will last until one's mid-forties, after which they begin to decline, primarily because activity levels and lean muscle mass (amount of muscle vs. body fat), which represents the BMR, decrease. It is believed that the changes in body composition and reduced lean muscle mass occur at a rate of about 5 percent per decade, and energy requirements decrease accordingly. However, these changes in body composition and decreased energy requirements can be

prevented by maintaining regular physical activity, including resistance training, which helps maintain lean muscle mass and prevent deposition of excess body fat.

The basal metabolic rate, the number of calories a person's body uses while at rest—generally decreases with age. Good health requires adults to adapt their diets to the body's changing needs by eating low-fat and nutrient-rich foods.

By preventing normal age-related decline in lean muscle mass, one can prevent obesity and prolong one's physiological age. The result is that a person is less vulnerable to degenerative diseases, such as cardiovascular diseases, cancer, and diabetes, and can usually perform at a higher level than his or her chronological age would otherwise allow.

Older adults who are not physically active or who have poor nutritional practices will have a decline in BMR, a change in body composition, an increasing percentage of body fat, and a decrease in lean body muscle mass. In addition, they will show the signs of aging and will be more likely to develop degenerative diseases.

Many older adults need to take medications to control the advance of diabetes, hypertension, and cardiovascular disease. Medications can interfere with proper nutrition, however, as they affect appetite, the digestion and absorption of nutrients, and normal function of the digestive system.

As women age, they may develop osteoporosis if they have not built up strong bones by eating foods high in calcium & adequate vitamin D. Women start losing calcium from bones during and after the onset of menopause at the rate of 1 percent per year for about five years, after which the rate of calcium loss is reduced until about age seventy-five or eighty. Therefore, it is important for women to eat foods high in calcium up to the age of thirty-five. The recommended daily intake of calcium is 1,200 milligrams. This requirement can be met by consuming four servings of dairy products and two servings of green vegetables each day. It is well established that calcium from foods is much better absorbed than calcium from supplements. It is beneficial, therefore, to choose foods with a high calcium content, such as low-fat or skim dairy products. This regimen builds a bone density high enough so that, at menopause, losing approximately 5 percent of bone density in five years does not place a woman in the "fracture zone," where bones can break as a result of osteoporosis.

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Conflicts of Interest

The authors declare that there is no conflict of interest.

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