

Health Benefits of Makhana (*Euryale ferox Salisb*)**Maske S. V.¹, John David² and Shelke S. A.³**^{1,3}Ph.D. Scholar, Food Science and Technology, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, Uttar Pradesh²Professor and Dean, Warner College of Dairy Technology, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj, Uttar Pradesh**SUMMARY**

Makhana is an important aquatic, annual and seed propagated crop with gigantic floating leaves. It is known as Gorgon nut (*Euryale ferox Salisb*) belongs to family Nymphaeaceae. Foxnut is a highly-valued aquatic crop due to its high amount of carbohydrate, protein, ash, crude fiber, minerals and phytochemical content. Foxnut plant species can take part remarkably towards the betterment of human health, fight against hunger and providing traditional medicinal effects.

INTRODUCTION

Makhana (*Euryale ferox Salisb.*) is one of the most important aquatic nut crops produced in India. It is known for its higher protein and carbohydrates content. It generally produces edible nut and it is superb medicinal plant used in ancient medicine in India and China 3000 years ago. The seeds of fox nut are used in ayurvedic preparations. It contains 11.16% protein and 75.04% carbohydrates. It strengthens the heart and is very useful in anemia (Jana et al., 2019). Makhana is an important ingredient, which is used to strengthen spleen and kidneys. It contains low sodium and high potassium, which reduces Blood Pressure and since it contains a very low amount of monosaturated fat, which prevents to increase blood sugar level (Jana et al., 2018). Besides, B.P and diabetes also help to control diseases like neuralgia, incontinence, chronic diarrhea and arthritis (Jana et al., 2019). Popped Makhana are used in the preparation of a number of delicious and rich sweet dishes like Makhanakheer, Makhana vermicelli and Makhana halva etc It is used in pudding and milk based sweets. Dal makhani and vegetable curries become delicious when Makhana is mixed for taste and thickening object. Makhanaraita is also tastier and digestive in nature (Lokendra et al., 2016).

**Nutritional value of foxnut**

Foxnut (*Euryale ferox Salisb.*) has low fat content, high carbohydrates contents, protein and minerals. The calorific value of raw seeds and puffed seeds is 328 kcal/100g and 362 kcal/100g respectively. Nutritional studies indicates that edible portion of the seed contains 12.8% moisture, 9.7% protein, 0.1% fat, 76.9% carbohydrate, 0.5% mineral contents

and 1.45% iron in addition to a good fraction of sugar, phenol and ascorbic acid. Amino acid index is higher than that of staple foods, which indicates its unique food quality. Foxnut possess a superior nutritional profile relative to other dry fruits such as walnut, almond, cashew nut or coconut in contents of sugar, proteins, phenol and ascorbic acid (Saima et al., 2020).

Medicinal properties of Makhana :

- The seeds contain sufficient amount of vitamins so, used to treat beriberi, a disease caused by deficiency of Vitamin B1.
- Feeding of *E. ferox*, stimulated humeral immunity and suggested its applications in mothers after delivery and invalids.
- Makhana alleviates Vata and Pitta Dosha. It strengthens the heart and is very useful in anemia. Makhana increases quality and quantity of semen, prevents premature ejaculation, increases libido and helps in female infertility. It strengthens body and increases energy level.
- Makhana is used as a tonic and for the treatment of leucorrhoea and good immunostimulant.
- Diabetes - Diabetes is a metabolic disorder, which is accompanied by high blood glucose levels. It is a result of improper functioning of the pancreas, which secretes the insulin hormone. Fox nut is a sweet and sour seed. These seeds contain starch and protein which is excellent for diabetes (Pravin et al., 2015).

Makhana as food

The seeds were sold and used as a stuffy dish. Many items that are ready to eat are made with sorted and grated foxnut as an ingredient. It is often used in the preparation of different dishes based on milk, including kheer and pudding. Roasted and fried Foxnut sprinkled with oil and spices are consumed as popular snacks. After frying the seeds are used as snack as well as in the preparation of vegetable dishes and curries. The fruits of *Euryale ferox* Salisb. are taken raw in a salad and chutney forms. Gluten free biscuits are prepared from foxnut powder for people with gluten allergy and for fasting people. Preparation of pua by adding foxnut powder to overcome protein and minerals deficiencies. Development of nutritious and stable infant food formulation for improvement of cognitive and behavioral in children. The application of popped foxnut inside the bakery product has been detected and used. The popped and puffed foxnut can be used to strengthen the gluten-free bun or bread's texture and consistency. Different sweet like makhana kalakand and makhana barfi are prepared from makhana flour. (Saima et al., 2020).

CONCLUSION

Makhana is herb is use to nutritional food as well as me medicinal purpose. In Ayurveda it is very useful drug many disease. In Chinese medicine Makhana use for treat to spleen and kidney disease. It is used as a functional food for the treatment of diabetes and the alleviation of its complications. *Euryale ferox* Salisb seed reduces hyperglycemia that could be triggered by the release of insulin from the remnant. It contains low sodium and high potassium, which reduces blood pressure and contains very low levels of monosaturated fat that prevent blood sugar from rising. It has all the nutritional and potential health benefits necessary to be regarded as a super food.

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