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Amaranth: From Ancient Roots to Modern Plates

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Abstract

Amaranth, an ancient pseudocereal revered for its extraordinary nutritional profile, is reclaiming its place as a global superfood. A vital source of high-quality protein, it also offers numerous health benefits and culinary possibilities. This article delves into amaranth's rich history, impressive nutritional composition, health-promoting properties and diverse culinary applications underscoring its potential as a sustainable solution to modern dietary challenges.

Introduction

Amaranth, derived from the Greek word "amarantos" meaning "unwithering," is one of the oldest cultivated crops with evidence of its cultivation dating back to 6700 BCE in the Americas. This warm-season annual is grown worldwide particularly in India, Mexico and Peru, where it is known as "*Ramdana*" or "God's own grain." Amaranth is valued for both its high-protein grain and edible leaves with species like *Amaranthus hypochondriacus, A. cruentus* and *A. caudatus* being widely cultivated. It was a staple in Aztec civilization and has since spread to regions like Central America, India and Africa.

In India, amaranth is known by various names depending on the region. In Uttar Pradesh and Bihar, it is called *chaulai*, often featured in "*laal saag*" preparations. In Uttarakhand's *Kumaun* region, it's known as *chua*, a famous red-green vegetable. In Karnataka, it's called *harive soppu* and used in curries like *hulee, palya,* and *majjigay-hulee*. In Kerala, it is *cheera*, stir-fried with spices and red chili peppers to make cheera thoran. In Tamil Nadu, it's *mulaikkira*, used in *keerai masial*, a dish where the greens are boiled, mashed and seasoned. In Andhra Pradesh and Telangana, it is *thotakura*, often made into curries or mixed with dal (*thotakura pappu*). In Maharashtra, it is *shravani maath*, available in red and white varieties. In Orissa, it's *khada saga*, cooked in a dish called *saga bhaja* with chile and onions. In West Bengal, the green form is *Notey Shaak*, while the red variant is *Laal Shaak*.

Amaranths belong to the Amaranthaceae family, with over 800 species. Some are cultivated for grains, others for leaves and some for ornamental purposes. Wild varieties, like pigweed are considered major weeds. Grain amaranths particularly *A. Cruentus* and *A. Hypochondriacus* are important crops in tropical and subtropical areas and are valued for their high-quality protein, fiber and micronutrients like calcium and iron. With its superior nutritional profile, amaranth is called the "third millennium grain" (Bressani, 1990).

Nutritional value per 100 g of Amaranth grain, uncooked

Energy	1554 kJ (371 kcal)
Carbohydrates	65.25 g
Dietary fiber	6.7 g
Protein	13.56 g
Vitamin B6	0.591mg
Folate (B9)	82µg
Vitamin C	4.2mg

Iron	7.61 mg
Magnesium	248mg
Calcium	159mg

Nutraceutical Value of Amaranth

Amaranth is gaining recognition as a superfood due to its exceptional nutritional profile, comprising high-quality carbohydrates, dietary fiber, omega-3 and omega-6 fatty acids, essential amino acids, and bioactive compounds such as squalene, tocopherols, phenolics, flavonoids, phytates, vitamins and minerals.

- **Rich Source of Protein:** Amaranth seeds provide superior-quality protein, containing essential amino acids critical for cellular regeneration, tissue repair, brain function, immune support and muscle recovery.
- **Anti-inflammatory Properties:** Studies suggest that protein hydrolysates from extruded Amaranth activate bioactive peptides that suppress pro-inflammatory markers, thereby reducing inflammation and potentially preventing chronic inflammation-related diseases. Incorporating Amaranth into the diet is a promising strategy for managing inflammation.
- **Bone Health Support:** Amaranth is an excellent source of calcium, which is essential for bone mineralization and overall skeletal health. With higher calcium content than many other seeds, Amaranth consumption may help prevent osteoporosis and enhance bone strength.
- **Cholesterol Regulation:** Research by Berger et al. demonstrated that Amaranth oil reduces total cholesterol and LDL levels while enhancing HDL levels indicating its positive impact on cholesterol metabolism.

- **Management of Peptic Ulcers:** Amaranth oil has been found effective in treating duodenal peptic ulcers and chronic gastritis caused by *Helicobacter pylori*.
- **Diabetes Management:** Amaranth's high manganese content supports blood sugar regulation by aiding gluconeogenesis. Adequate manganese intake via Amaranth can help prevent diabetes, improve immune function, and maintain cholesterol, skin, bone and renal health. Studies on Type II diabetes show that Amaranth starch facilitates glucose absorption, while its oil enhances cardiovascular health.
- **Gluten-Free Benefits:** As a naturally gluten-free pseudo-cereal, Amaranth is an excellent choice for individuals with gluten sensitivity, celiac disease, or malabsorption issues. It caters to athletes, vegans, vegetarians, and those with dietary restrictions. For people with celiac disease, consuming Amaranth can alleviate symptoms such as nutrient deficiencies, fatigue, diarrhea, and joint pain.
- **Support for Pregnancy:** Amaranth is rich in folate (88.0 mcg), an essential nutrient for preventing neural tube defects and congenital heart abnormalities during pregnancy. Folate in Amaranth also promotes cell formation and overall fetal development.
- **Relief from Constipation:** With a high insoluble fiber content (approximately 80%), Amaranth helps prevent constipation by facilitating water binding and improving bowel movements.
- **Protection Against Oxidative Stress:** Amaranth is abundant in antioxidants like polyphenols, ascorbic acid, phenolic acids and tocopherols. These compounds protect against oxidative stress by neutralizing free radicals, preventing damage to nucleic acids, lipids, and proteins and mitigating the risk of chronic diseases.
- **A Versatile Superfood for Holistic Health:** Amaranth offers diverse health benefits, acting as an anti-hypertensive, antioxidant, antithrombotic and anti-proliferative agent. As a resilient crop that thrives under harsh climatic conditions, it provides a cost-

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effective, sustainable solution to combat malnutrition, chronic diseases and inflammation. Its adaptability and rich nutrient profile solidify its status as a "super crop" for advancing global nutrition and health.

Processing Technique of Amaranth

Culinary Innovations with Amaranth

- **Raab**
  - **Ingredients:** 2 tbsp Amaranth flour, 1 tsp ghee, 1 cup jaggery water, ½ tsp dried ginger powder.

- **Method:** Roast Amaranth flour in ghee. Add jaggery water while stirring. Mix in ginger powder and cook until thickened. Serve warm.

- **Nutritious Breakfast**
  - **Ingredients:** ½ cup Amaranth seeds, 2-3 cups milk or water, 1 apple (chopped) or 2 tbsp cranberries, 1 tbsp honey.
  - **Method:** Boil Amaranth seeds in milk/water. Add fruits and honey. Serve hot.
- **Energy Laddus**
  - **Ingredients:** 1½ cups popped Amaranth, ½ cup jaggery, ½ cup water, ¼ tsp cardamom powder, ghee (for shaping).
  - **Method:** Heat jaggery with water until thickened. Mix with popped Amaranth and cardamom powder. Shape into laddus with greased hands.
- **Rajgira Theplas**
  - **Ingredients:** 250g Rajgira flour, 1 tbsp warm ghee, 1 boiled potato (mashed), black pepper, salt, water.
  - **Method:** Combine all ingredients into a dough. Roll into theplas, cook on a greased skillet until golden. Serve with curds and chutney.
- **Amaranth Squares**
  - **Ingredients:** 1 cup popped Amaranth, 1 cup jaggery, ¼ cup water, 2 tbsp milk or nut milk, 2 tbsp ghee, rosewater/rose petals (optional).
  - **Method:** Pop Amaranth seeds. Heat jaggery with water and milk until caramelized. Mix with popped seeds. Spread in a greased dish, garnish with rose petals, and cut into squares.

Conclusion

Amaranth, a resilient ancient grain, combines exceptional nutrition with culinary versatility, making it a vital superfood for modern diets. Rich in high-quality protein, fiber, antioxidants, and essential nutrients, it supports health by managing inflammation, diabetes, cholesterol, and gluten sensitivity while promoting bone health and pregnancy wellness. Its adaptability to traditional and modern recipes, alongside its sustainable cultivation, highlights its role in combating malnutrition and addressing global dietary challenges. Amaranth is not just a food of the past but a solution for a healthier and sustainable future.

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