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A Review of the Nutritional Profile of Farmed *Labeo Rohita* in Maharashtra

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***Abstract*-- *Labeo rohita* (Rohu) is one of the most important freshwater fish species cultured in Maharashtra and contributes significantly to the state's inland fisheries and aquaculture sector. Due to its high nutritional quality, consumer preference, and affordability, Rohu has become an important source of animal protein for the population of Maharashtra. This review summarizes the nutritive value of *Labeo rohita* with special reference to Maharashtra. Rohu is rich in highly digestible protein, essential amino acids, beneficial fatty acids, vitamins, and minerals. Studies conducted in aquaculture systems of Maharashtra have demonstrated that Rohu possesses excellent nutritional characteristics suitable for human consumption. Regular consumption of Rohu can contribute to improved nutritional security and public health in the state.**

***Keywords*-- *Labeo rohita*, Rohu, nutritive value, Maharashtra, protein, amino acids, minerals, aquaculture**

I. Introduction

Maharashtra is one of India's leading states in inland fisheries and aquaculture production. Freshwater fish culture is widely practiced in ponds, reservoirs, and tanks across districts such as Nagpur, Chandrapur, Bhandara, Gondia, Nashik, and Palghar. Among cultured freshwater fishes, *Labeo rohita* (Rohu) is highly preferred due to its rapid growth, market demand, and nutritional quality.

Fish are recognized as an excellent source of high-quality protein and essential micronutrients. Rohu plays an important role in meeting the dietary requirements of rural and urban populations of Maharashtra. The nutritional value of Rohu is determined by its protein content, amino acid composition, fatty acid profile, vitamin concentration, mineral availability, and digestibility. Understanding these nutritional attributes is essential for promoting fish consumption and improving food security in the state.

II. Materials And Methods

The present review is based on published research articles, fisheries reports, aquaculture studies, and nutritional databases related to *Labeo rohita*. Literature from Indian fisheries institutions and studies involving Rohu cultured under Maharashtra conditions were reviewed.

Information regarding protein quality, amino acid profile, fatty acids, vitamins, minerals, and digestibility was collected, compiled, and analyzed to assess the nutritive value of Rohu.

III. Results

Protein Quality- Rohu is an excellent source of high-quality animal protein. Fresh Rohu muscle contains approximately 16–20% protein, which is highly digestible and biologically valuable. Protein obtained from Rohu supports tissue growth, muscle development, enzyme synthesis, and maintenance of body functions. Studies on cultured Rohu indicate that protein remains the most important nutrient contributing to its food value (Shingadia et al,2019).

Essential Amino Acids- Rohu contains all essential amino acids required for human nutrition. Important amino acids reported in Rohu include lysine, leucine, methionine, threonine, valine, and isoleucine. These amino acids are necessary for growth, protein synthesis, immune function, and metabolic regulation. The balanced amino acid composition makes Rohu a superior source of dietary protein.

Fatty Acid Content-Although Rohu is classified as a lean freshwater fish, it contains nutritionally beneficial fatty acids. The fish contains polyunsaturated fatty acids (PUFAs), including omega-3 fatty acids such as EPA and DHA. These fatty acids are associated with cardiovascular health, brain development, and anti-inflammatory functions. Studies on Rohu have reported favorable fatty acid profiles and healthy lipid indices.(Das, et.al,2022)

Vitamin Content- Rohu contains several vitamins important for human health, including: Vitamin A, Vitamin D, Vitamin B-complex (especially B12, niacin, and riboflavin).

These vitamins contribute to vision, bone health, energy metabolism, and nervous system function. Recent analyses of Rohu have shown the presence of significant levels of fat-soluble vitamins in edible tissues (Dayami, H., & Sarojnalini, 2019)

Mineral Content- Rohu is a valuable source of essential minerals. The major minerals reported include: Calcium, Phosphorus, Potassium, Magnesium, Iron, Zinc.

These minerals are important for bone formation, oxygen transport, nerve function, and immune responses. Mineral composition studies indicate that Rohu provides substantial micronutrient benefits when included in the regular diet (Dayami, H., & Sarojnalini, 2019)

Digestibility-Fish proteins are generally easier to digest than proteins from red meat. Rohu possesses soft muscle fibers and low connective tissue content, making it highly digestible. This characteristic makes it suitable for children, elderly individuals, and patients requiring easily digestible protein sources. Digestibility studies in Rohu have demonstrated efficient utilization of dietary proteins and lipids (Paul,2025)

IV. Discussion

The nutritional significance of Rohu in Maharashtra is closely linked to its high protein quality and micronutrient content. Rohu cultured in Maharashtra's freshwater systems exhibits nutritional characteristics comparable to those reported from other regions of India. Research conducted using Rohu obtained from fish farms in Palghar and Mumbai has demonstrated the species' capacity to efficiently utilize nutrients and maintain desirable body composition (Mukhopadhyay, et.al, 1997).

The presence of essential amino acids enhances the biological value of Rohu protein, while omega-3 fatty acids contribute to cardiovascular and neurological health. Vitamins and minerals present in Rohu further improve its nutritional importance by supporting growth, immunity, and metabolic functions.

Maharashtra's increasing aquaculture production offers opportunities to improve nutritional security through greater availability of Rohu. As fish consumption increases, Rohu can serve as an affordable and sustainable source of high-quality nutrition for both rural and urban populations.

V. Conclusion

Labeo rohita is a nutritionally important freshwater fish widely cultured in Maharashtra. It provides highly digestible protein, essential amino acids, beneficial fatty acids, vitamins, and minerals required for human health. Studies associated with Maharashtra aquaculture systems indicate that Rohu possesses excellent nutritional quality and contributes significantly to food and nutritional security. Promotion of Rohu culture and consumption can play an important role in addressing protein and micronutrient deficiencies in the state.

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