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Vitamin-A Content of Small Indigenous Species *Mola Amblypharyngodon mola* at Different Agro-Ecologies in Bangladesh and Its Potential Role in Public Health

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This study investigates the vitamin A content of Mola carplet (*Amblypharyngodon mola*), a small indigenous fish species, from various aquatic environments in Bangladesh. This study aims to evaluate how these waterscapes affect the nutritional value of vitamin A, given its critical role in human health, particularly in vulnerable groups. Fish samples were collected from seven different habitats across Bangladesh and were divided into three sub-groups: whole fish, head including eyes, and muscle (cleaned without intestines and head). These samples were analyzed for vitamin A1 and A2 content using high-performance liquid chromatography.

This study has shown that a single serving of whole mola fish from gher alone contributes much in terms of nutritional values to different groups of people - for infants aged 7-12 months, one serving (25g) can fully meet their daily recommended nutrient intake (Fig 2). A single serving (50g) would meet the daily RNI for pregnant women (19+), while the same serving level provides lactating women (19+) with 78% of their RNI (Fig 2). This study also demonstrates that the of Vitamin A1 content of Mola fish is highly dissimilar between the muscle and head parts. The muscle constitutes 67% of the fish’s weight, can only provide 12.25% RNI of Vitamin A1, while the head, constituting 25% of total weight, can provide 415% RNI - good for the RNI requirement of four adult males. Most households discard the mola fish head during dressing, missing out on essential nutrients like vitamin A. Promoting the inclusion of mola fish heads in meals or developing ready-to-use mola head-based powder could help address this nutritional gap. The study further shows that Vitamin A ranges vary greatly across different aquatic environments. Vitamin A1 has the highest concentration in Gher at 2027 µg/100g and the lowest river at 192 µg/100g. On the other hand, pond (wild source) contains the highest Vitamin A2 with a value of 11,500 µg/100g, while the least recorded is that of rice fish field samples at 3208 µg/100g. Vitamin A1 in Mola fish has increased tremendously during the last two decades. From the wild systems, Haor now has a concentration of 773 µg/100g, increased from 2001 by 139.3%, while in Gher (aquaculture) it has jumped up to 2027 µg/100g-an increase of 496.8%, indicating improvement in the nutritional quality of the fish.



Figure1: Percentage weight distribution of different parts of mola.

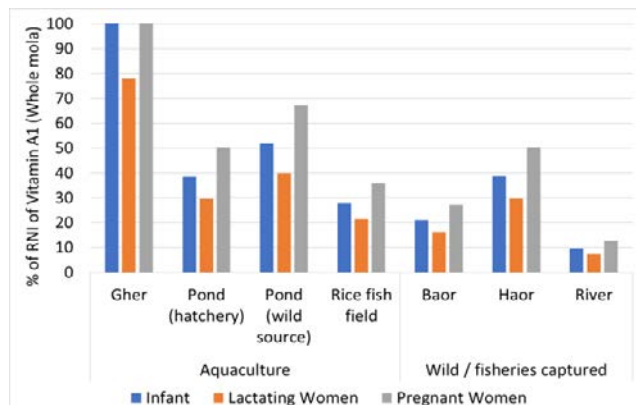


Figure 2: Percentage of recommended nutrient intake (RNI) of vitamin A1 provided by one serving of whole mola fish for different group. The x-axis displays the different habitats.