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Role of Gastrointestinal Microflora in Digestion and Metabolism in Fish

Ganguly Subha*

AICRP On Post Harvest Technology (ICAR), Department of Fish Processing Technology, Faculty of Fishery Sciences, West Bengal University of Animal and Fishery Sciences, 5, Budherhat Road, P.O. Panchasayar, Chakgaria, Kolkata-700 094, WB, India

*E-mail: ganguly38@gmail.com

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Abstract

Enzyme found in intestinal lumen of fishes could have potentially come from either the pancreas or the secretory cells of gut wall. In addition, enzymes from intestinal microflora have a potential role in digestion, especially for substrates such as cellulose which few animals can digest and other substrates as well. The intestinal tract of fishes is generally colonized by great number of heterophilic bacteria including aerobes and anaerobes. Many ecological studies on gut microflora of fish have been presented from time to time.

Key words: Enzyme, Microflora, Fish

Introduction

Starch is a major ingredient of feed for freshwater fishes such as carps and Tilapia. The starch ingested is hydrolyzed into its constituent sugars and oligosaccharides in the digestive tract of fishes. The enzyme amylase is widely present in the digestive tract of freshwater fishes and plays an important role in the digestion of starch. Fish in general utilize dietary carbohydrate poorly. Furthermore, different types of carbohydrates may not be equally available to fish. Dietary fibre generally refers to all indigestible plant matter mainly cellulose and other complex polysaccharides. It has long been considered an inert and insignificant part of an animal's diet, mainly because it was believed to contribute little nutritionally¹.

Mechanism of action in digestion

Vegetable biomass is abundant in many freshwater environments and cellulose, being the main structural material of plants, is the most abundant carbohydrate in nature. However, little work has been carried out to determine the ability of predominantly herbivorous fish to utilize the structural polysaccharides which constitute a major element of the total calorific value of plant material. It is a proven fact that a significant cellulolytic bacterial population exists in the gut of a number of species of non-ruminant animals. It was generally been accepted that nutritional consequential cellulolytic activity was confined to ruminant species. Dietary utilization of cellulose in fishes occurs due to presence of specific enzymes which may be either endogenous or exogenous. Indian major carps, which are poikilothermic animals, produce cellulase endogenously and there a stable cellulolytic microflora present in their digestive tract².

Conclusion

Cellulolytic bacteria present in fish digestive tract have an influence in metabolism and there exists a correlation between the degree of cellulolytic activity and feeding habit.

References

1. Ganguly S, Prasad A. Microflora in fish digestive tract plays significant role in digestion and metabolism: a Review. *Rev. Fish Biol. Fisheries*. **2012**, 22: 11-6, doi: 10.1007/s11160-011-9214-x
2. Ganguly S. Potential and Recommended Feed Additives for Sustainable Aquaculture, Livestock and Poultry Farming Practices. Narendra Publishing House [NPH], Delhi. **2013**, *Book proposal Accepted and in press*.