

## Microbiological and Quality Assessment of Commonly Used Fish Diets from Basrah, Iraq

Jalal M. Al-Noor<sup>1</sup>, Wael A. Al-Waely<sup>2\*</sup>

<sup>1</sup>Aquaculture Unit, University of Basrah, Basrah, Iraq

<sup>2</sup>Department of Food Science and Biotechnology, College of Agriculture, University of Basrah, Iraq

Corresponding author: Wael.swadi@uobasrah.edu.iq

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### ABSTRACT

This research was conducted to determine the microbial and quality assessment of some fish diets commonly used in Basrah Governorate. Samples weighing 1kg each were collected in December 2023 from various areas in the Basrah Governorate, randomly selected to represent the conditions of the sampled sources. The pour plate method was used for microbial counting, and the concentrations of biogenic amines were monitored using HPLC (High-Performance Liquid Chromatography). The quality characteristics measured included pH, TVN, FFA and TBA. The results indicated that the fish diet samples had a pH ranging from 6.53 to 6.95, with volatile nitrogen bases measured between 17 and 18.22mg nitrogen/100g fish. The free fatty acids values ranged from 0.27 to 0.84%, while the results for malondialdehyde (TBA) varied between 1.53 and 3.28mg malondialdehyde/kg fish. The diets contained 18 amino acids in a balanced composition of essential and non-essential amino acids, with varying profiles among all treatments. The microbial count results showed variability in numbers depending on diet type. The highest recorded total bacteria count was 200cfu/ g. The counts for protein-degrading bacteria, fat-degrading bacteria, *Staphylococcus*, coliforms and fungi were 90, 6, 3, 2, and 5cfu/ g, respectively. Histamine concentrations were measured between 0.547 and 1.582mg/ kg. In conclusion, the result confirmed the validity of the examined diets for feeding cultured fish in Basrah, Iraq. However, the study demonstrated the necessity of monitoring and evaluating the qualitative parameters of fish diets and detecting the levels of chemical, microbial, and histamine indicators to maintain fish health and support their growth.

### INTRODUCTION

Proper nutrition is a crucial factor for the success of aquaculture by following a comprehensive dietary regimen that meets the needs of the cultivated fish species through the use of functional ingredients with immune-boosting properties in diet, which can enhance fish health, growth performance and disease resistance (Singh *et al.*, 2021). Development of aquafeed industry relies primarily on the improvement of diets and the