

Ant oxidative and Functional Properties of *Rastrineobola argentea* (Dagaa) Fish Protein Hydrolysate.

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Abstract

Protein hydrolysates are good nutritional supplements as their bioactive ingredients can be easily absorbed and utilized for various metabolic activities. Antioxidative activity and functional properties of fish protein hydrolysate prepared from *Dagaa* (*Rastrineobola argentea*) using exogenous commercial enzyme (Alcalase) and endogenous enzymes were investigated. The degree of hydrolysis (DH) of Alcalase hydrolysate (AH) was 83 % while that of *Dagaa* endogenous enzymes hydrolysate (EH) was 45%. The hydrolysates contained 13.3 % and 12.6 % protein on a wet weight basis respectively and no detectable lipid content. The antioxidant potential was established as Oleic acid (lipid) peroxidation inhibition at 31.5 %, 49.5 % and 29% for AH, EH and the commercial antioxidant Butylhydroxytoluene (BHT) respectively. Similarly, 2, 2, diphenyl-1-picrylhydrazyl (DPPH) percentage free radical-scavenging activity was established at 90 %, 71.8 % and 89 % for AH, EH and BHT. Percentage DPPH radical scavenging ability using IC50 was 2.84 mg/ml, 8.00 mg/ml and 2.4 mg/ml for AH, EH and BHT, respectively. Ferric ion reducing inhibition test also showed a similar trend with AH showing significantly higher Ferric ion reducing inhibition power in comparison to EH. The functional properties tested were solubility, emulsifying capacity, fat absorption and foam stability of the hydrolysates. The relative solubility increased with increase in percentage DH. At pH 7, AH showed solubility of 43 % and EH 29 %. Consequently, it can be concluded that AH is a better antioxidant in polar systems (higher DPPH % radical scavenging ability and Ferric ion reduction inhibition) whereas the EH is a better antioxidant in non-polar systems (higher Lipid peroxidation inhibition). The promising functional and antioxidative properties of AH and EH suggests that *Dagaa* protein hydrolysate presents a promising candidate for inclusion in food systems.

Keywords: Dagaa, Antioxidant, Protein hydrolysate, DPPH, Alcalase.

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