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Short communication

Correlation between body weight and nutritional value of Alosa kessleri

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Abstract

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In this study, chemical composition and fatty acid content in *Alosa kessleri* regarding to body weight was determined. Thirty fish (average weight = 47.43 ± 33.47 g) in the weight range of 10.3 to 123.0 g were caught by gill net from Caspian Sea (Chalous, Iran) and transported to laboratory for further analysis. A significant correlation between fish weight and protein (r = 0.458, P = 0.011) and fat (r = -0.622, P = 0.001) content was observed. There was a close range of the three groups of fatty acids to each other, saturated fatty acids (SFA = 31.41%), polyunsaturated fatty acids (PUFA = 30.69%), and monounsaturated fatty acids (MUFA = 29.18%). Palmitic acid (C16:0) (20.85% of total fatty acids), and oleic acid (C18:1) (24.95% of total fatty acids), were the most abundant SFAs and MUFAs, respectively. A higher content of n-3 fatty acids was observed than n-6 fatty acids, resulting in n-3/n-6 ratio of 5.25. A significant correlation was found for DHA/EPA ratio (r = 0.449, P = 0.013) with fish weight. The results of the study indicated that protein and lipid content and DHA/EPA ratio were influenced by body weight.

Keywords: Alosa kessleri; chemical composition; fatty acid; body weight

Introduction

Seafood is major source of high-quality protein with well-balanced essential amino acids and nutritionally valuable lipids and fatty acids (Chaijan et al., 2006). It is rich in n-3 polyunsaturated fatty acids (PUFAs) and contains low cholesterol level (Barrento et al., 2010). The main bioactive omega-3 fatty acids are eicosapentaenoic acid (EPA) (20:5n-3) and docosahexaenoic acid (DHA) (22:6n-3) (Jacobsen et al., 2008; Barrento et al., 2010; Orban et al., 2011). N-3 is not synthesized in the human body (Simopoulos, 2002), and seafood is reported to be the only main source of n-3 PUFA in the human diet (Ghomi et al., 2012). Due to the strong clinical support for the role of EPA and DHA in maintaining health, the intake of omega-3 fatty acids, specifically EPA and DHA is recommended (Simopoulos, 2002; Barrow et al., 2007). With the growing emphasis on the importance of n-3 PUFA on human health and nutrition, it is important to determine the n-3 content of fish and fish products (Ghomi et al., 2013).

Fatty acid composition of fish flesh is influenced by several biological factors such as diet, season, fillet portions, species, habitat, water salinity and age of the fish (Badiani et al., 1997; Katikou et al., 2001; Shirai et al., 2002; Celik et al., 2005; Gonzalez et al., 2006; Palmeri et al., 2007; Özogul et al., 2007; Huynh and Kitts, 2009; Xu et al., 2010; Usydus et al., 2011; Ghomi et al., 2012; Tao et al., 2012; Ghomi et al., 2013). However, information on the effect of weight of