DEVELOPMENT OF A FEED INCORPORATING FISH ROE OIL FOR ORNAMENTAL FISH

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Abstract

Fish oil contains essential polyunsaturated long chain fatty acids which are crucial for normal growth and survival of the fish. Food fish roe and fish waste contain oils in different levels. Even though roe of food fish have a lower demand in Sri Lanka, there is a potential of extracting edible fish roe oil and fatty acids. In this study, five different oil producing methods; heat and salt extraction, enzymatic hydrolysis, mechanical pressing and solvent extraction were tested with selected four fish species (*Thunnus albacares, Katsuwonus pelamis, Canthidermis maculata* and *Lepidocybium flavobrunneum*) to identify the best method, fish roe type and best solvent for roe oil extracting w well as incorporating roe oil in ornamental feed development to enhance growth performances and colouration of *Xiphophorus maculatus* fish. Solvent extraction with 2-propanol was found to be the best method of producing roe oil considering oil yields. (1.48±0.70 g: *T. albacares,* 1.33±0.10 g: *K. pelamis*, 1.27±0.25 g: *C. maculata* and 1.01±0.01 g: *F. flavobrunneum*). Hence, solvent extraction method was carried out for the selected mature roe of four species using four types of solvents: (50ml) 2-propanol, hexane, acetone and mixture of hexane and 2-propanol (70:30). Oil yields of roe in different maturation stages were (using 2-propanol) measured and compared. Highest oil yields were recorded by mature roe of every species. The results showed a significant difference between oil yields and solvents used for extraction ($P<0.05$). Highest oil yield was obtained (25 g of matured roe) as 1.60±0.26 g with acetone extraction for *T. albacares*. It was revealed that roe of *T. albacares* is the most suitable for extraction of roe oil. There is a significant difference between growth performances of *Xiphophorus maculatus* and feed types. Highest specific growth rate of *Xiphophorus maculatus* was obtained by Yellowfin tuna roe oil incorporated feed (2.25 ± 1.2).

Keywords: Roe oil, Solvent extraction, Maturation, Specific growth rate