



## Original Article

# Optimizing the Co-feeding strategy of Persian sturgeon (*Acipenser persicus*) larvae using *Artemia* nauplii and formulated diet

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**Abstract:** High mortality and labor costs are associated with first-feeding sturgeon culture, particularly during the period of dietary transition from live to formulated feed. Therefore we investigated the effects of various feeding treatments on the survival and growth of the Persian sturgeon (*Acipenser persicus*) larvae during a 20-day culture period. Three replicate groups (250 fish/replicate) of first-feeding larvae were fed according to four main feeding regimes: (1) live food (live nauplii of brine shrimp *Artemia urmiana*); (2) indirect transition (5 days live food followed by gradual transition to formulated diet); (3) direct transition (using different combinations of live and formulated diet from the start feeding onwards); (4) formulated feed (FD) from the start feeding. Results indicated that growth and survival were higher in the indirect transition feeding regime than in other regimes. Based on our study, Co-feeding of *A. persicus* should start five days after prior feeding with live food.

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## Introduction

Sturgeon fish are mainly cultured for the production of caviar, as a result of the sharp decrease in production capacity of caviar from natural resources such as the Caspian Sea. Additionally they are also an important source of commercially valuable fish meat. However, the feeding patterns of these species on natural food have only been studied on a small scale. This is especially true for the larval and juvenile stages, which are the most critical stages in the commercial production of these species. The Persian sturgeon (*Acipenser persicus*) as a sturgeon fish is a migratory species which are especially adaptable to changes in their environment and in food supply; thus, they can occur and attain satisfactory growth in various climatic zones. These fish species have been the focus of much attention in Iran over the last decade because they are

particularly interesting species in terms of rearing value.

At the onset of exogenous feeding, different sturgeon species possess an anatomically complete digestive tract with a marked specialization at different segments (Buddington and Christofferson, 1985; Gawlicka et al., 1995; Gisbert et al., 1998; Asgari et al., 2013). Artificial larval diets have been used for intensive commercial culture of several acipenserid species from the onset of exogenous feeding onwards (Charlon and Bergot, 1991; Giovannini et al., 1991; Hung, 1991; Gisbert and Williot, 1997). However, the end of the lecithotrophic stage and transition to exogenous feeding are still characterized by considerable larval mortality (Buddington and Christofferson, 1985; Giovannini et al., 1991; Gisbert and Williot, 1997; Bardi et al., 1998). This observation suggests that nutritional

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