

# HISTOLOGICAL DEVELOPMENT OF THE DIGESTIVE TRACT OF BLACK SEA TROUT (*SALMO TRUTTA LABRAX PALLAS, 1811*) DURING LARVAL ONTOGENY

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## Abstract

In this study, development of the digestive tract of the Black Sea Trout (*Salmo trutta labrax* PALLAS, 1811) which is endemic and also endangered species in their natural habitat was identified in early larval stages. For this reason, fish larvae breeding in fresh water recirculating aquaculture system (RAS) were examined by histologically from hatching to fish larvae consumed their yolk sac. Finally, the digestive system of Black Sea trout which is endemic and also endangered species in their natural habitat was determined.

**Keywords:** *Aquaculture, Black Sea, Fishes*

## Introduction

In Europe, some Salmonidae species especially Norwegian Salmon is cultured extensively for a long time [1,2]. Black Sea trout (*Salmo trutta labrax* PALLAS, 1811) which is endemic subspecies of Salmonidae is distributing naturally in the northeastern rivers of Turkey and the Black Sea [3]. Also, they culture being widespread recent years in Turkey [4]. Despite expanding aquaculture, scientific researches about physiology of this species are not enough.

## Material and Method

For this reason; Black Sea trout was cultured in fresh water recirculating aquaculture system (RAS) at 10°C first and later their evolution of digestive system was examined by histologically. The sampling was carried out randomly with ten individuals for each day from hatching to the consumption of yolk sac through 30 days. The samples were fixed in Bouin's solution (10% neutral-buffered formalin) until further processing. Subsequent to sampling, the samples were dehydrated with ethanol (70%, 70%, 80%, 90%, 95%, 100% respectively) and embedded in paraffin as a whole body. After that, fish larvae were crosscut throughout the whole body with microtome (Leica RM2135) and obtained sections were stained with haematoxylin-eosin. Finally, stained sections were examined under the light microscope and development of the digestive system of Black Sea trout was specified [5].

## Result and Discussion

According to the Figure 1; trout larvae grew consistently throughout sampling period while yolk sac consumed till 30th day.

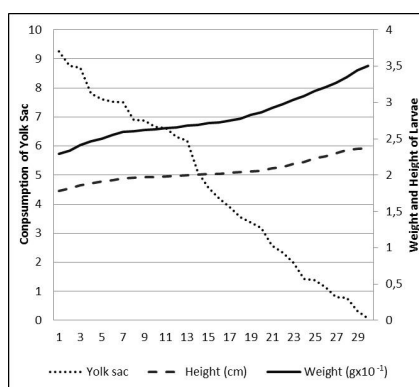


Fig. 1. Height, weight and yolk sac consumption of Black Sea trout larvae through 30 days.

According to the results; mouth was open in the first day. Taste buds being apparent in 12th day and covered surface of the tongue till the 28th day. Stomach and esophagus were observed clearly in the first day and also stomach wall became thicker and more developed till the 29th day. The intestine was started to be observed in the fifth day, the mucosal folds were clearly observed in the 7th day and it grew and expanded through to the

intestine until the 25th day. In the 15th day, separation of mid and distal intestine structures was seen. Pancreas and liver cells were started to be observed in the 5th day, they improved till the 18th day and liver and pancreatic tissues were observed clearly in the 29th day (Figure 2).

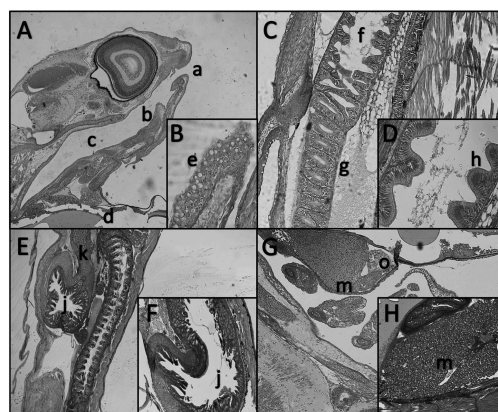


Fig. 2. **A:**Head of Black Sea trout larvae in first day, a:mouth, b:tongue, c:esophagus, d:yolk sac; **B:**Tongue of larvae in 28th day, e:mucus cells and taste buds; **C:**Segments of intestine during 15th day, f:mid intestine, g:distal intestine; **D:**Section of mid intestine in 29th day, h:mucosal folds;**E-F:**Digestive tract between 23-28th day, j:stomach, k:pyloric caeca; **G-H:** liver and pancreatic tissues between 5-29th days, m:liver, o:pancreas.

In this research, development of the digestive tract of the Black Sea Trout was determined and basic data of its anatomy was revealed in larval stages. These results will shed light on further studies.

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