

## **Microscopic Study of the Chloride Cells of the *Aphanius dispar* (Rüppell 1828) (Pisces: Cyprinodontidae) Gills**

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*Aphanius dispar* (Rüppell 1828) (Pisces: Cyprinodontidae), is widely distributed fish in fresh water of the Middle East. Few studies were conducted on the structures of these fish organs. Chloride cells are considered as the primary site of active physiological and metabolic activities of the gill. This study aimed to look at the structure of the chloride cells of the gills. The fish were collected and transported into the Biology Department, Sultan Qaboos University, Oman. The fish were killed by placing them in ice for few minutes.

They were dissected out for their gills. The gills were fixed in Karnovsky buffered with sodium cacodylate to a pH of 7.4 for four hours and then cut into small pieces. The tissue were washed in cacodylate buffer and then post-fixed in 1% aqueous solution of osmium tetroxide for 1 hour and dehydrated in a series of alcohol before embedding in Agar 100 resin. Semi and ultra-thin sections were cut using Reichert ultramicrotome. The semi-thin sections were stained with toluidine blue and the sections were examined using a Nikon 104 light microscope. The ultra-thin sections were stained with uranyl acetate and post-stained in lead citrate. They were examined under JEOL JEM -1230 TEM.

The gills contain different types of cells such as pavement cells, chloride cell, pillar cells and mucous cells. Chloride cells are small in number when compare with pavement cells (Fig.1). They have polyhedral shape and usually found in both, the filaments and lamellae of the gills (Fig. 1). Each chloride cell contains a large number of mitochondria with variable sizes (Fig 2).

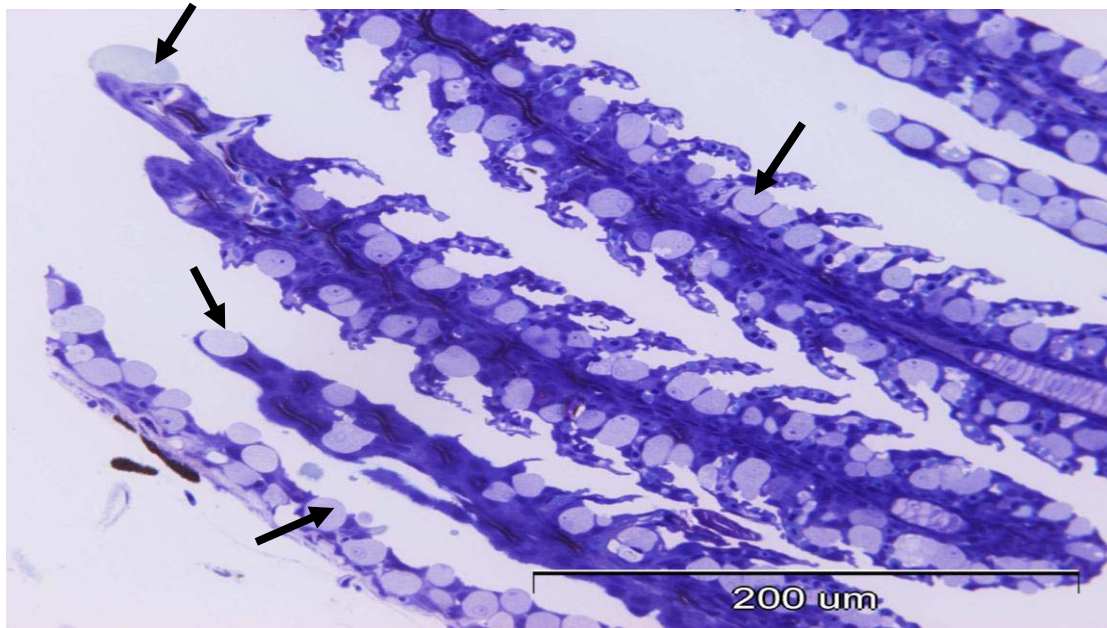


Fig.1. Light micrograph of filaments and lamellae of the gills showing chloride cells indicated by arrows. Scale bar = 200 μm.

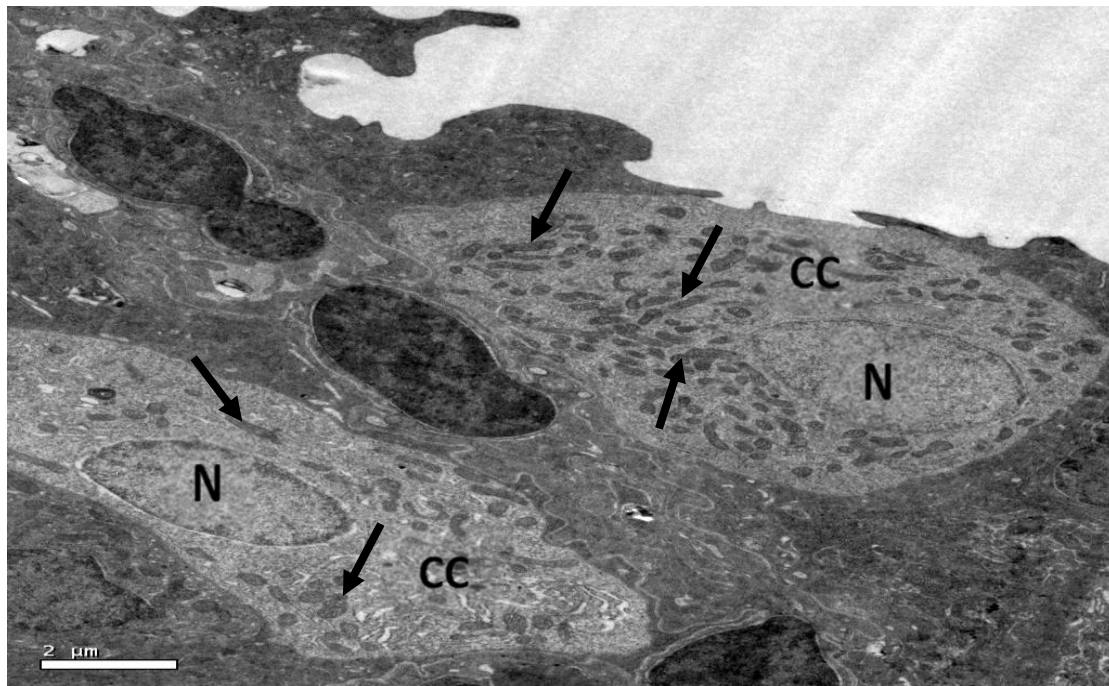


Fig 2. Transmission electron micrograph of *Aphanis dispar* gill showing chloride cells (CC) with their nuclei (N) and many mitochondria (arrows). Scale bar = 2 μm.