

Morphological Studies of the Gills of the Red Swamp Freshwater Crayfish *Procambarus clarkii* (Crustacea: Decapoda: Cambarids) (Girard 1852) from the River Nile and Its Branches in Egypt

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Abstract : The red swamp freshwater crayfish breathe through three types of feather-like trichobranchiate gills; podobranchiae, arthrobranchiae and pleurobranchiae. All gills have the same general structure and appearance; plume-like with single broad setiferous, and single axis. The gill consists of axis with numerous finger-like filaments, having three morphological types; round, pointed and somewhat hooked shaped. The direction of filaments vary according their position; in middle region were nearly perpendicular to gill axis while in the apex were nearly parallel to axis. There were characteristic system of gill spines on; central axis (two types were distinguishable by presence of socket), basal plate, setobranch (long non-branched and short multidenticulate) and on the bilobed epipodal plate. There are four shape of spinated-like distal region of setobranch seta; two pointed processes (longitudinal arrangement and irregular arranged) and two broad processes (transverse triangular and multidenticulate). The bilobed epipodal plate devoid from any filaments and extended from outer side of podobranchiae as triangular basal part then extended between the gills as cord-like middle part then pass under the gill to lies against the thoracic body wall. By SEM, the apical part of bilobed epipodal plate have serrated free border and corrugated surface while the middle part have none serrated free border. There are two methods of gill cleaning mechanism in crayfish; passive and active method. The passive method occurred by; setae of setobranch, branchiostegite, bilobed epipodal plate, setiferous arthrobranchial lamellae and reversing the respiratory water through a narrow spaced branchial chamber.

Keywords : crayfis, gill spines, setobranch, gill setae, cleaning mechanisms

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