COMPLEMENT C1Q HAS A NOVEL TETRAMERIC STRUCTURE IN NILE TILAPIA (*OREOCHROMIS NILOTICUS*)

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ABSTRACT

Complement C1q is the first subcomponent of the classical complement pathway, and a major molecule connecting link between innate and adaptive immunity. Mammalian C1q is a hexamer of a molecular weight about 410 kDa; however, little is known about its structural characteristics in teleost. In this study, a rapid method for isolation of the C1q (OnC1q) was developed to investigate its biochemical characterization in Nile tilapia (*Oreochromis niloticus*). Using a rabbit IgG-Sepharose affinity column, complement OnC1q was isolated from fish sera in a single step, and the C1q further purified by gel filtration through a Sephacryl-S300 column. OnC1q on reduction by electrophoresis on SDS-PAGE yields equimolar amounts of C1qA, C1qB and C1qC chains with molecular weights about 23, 25, 21 kDa, respectively. Unreduced OnC1q was shown to be composed of two non-covalently linked subunits of molecular weights about 48 (A-B dimers) and 42 kDa (C-C dimers), with a ratio of 2:1. Further, Gel filtration on Sephacryl-S300 showed that native OnC1q was eluted as a single peak of molecular weight about 280 kDa, which was confirmed by SDS-CAGE analysis. Thus, in comparison to the hexameric form in mammals, OnC1q may possess a unique tetrameric structure with a mammalian-like heterotrimeric organization composed of C1qA, C1qB and C1qC. The revealing of C1q novel structural in teleost may provide insight into the structural and functional evolutionary history of the C1q family and the classical pathway in early vertebrates.

KEYWORDS

C1q, Nile tilapia (*Oreochromis niloticus*), tetrameric structure, evolution

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