

## SEA ANEMONES (ATHENARIA) AS A KEY GROUP FOR THE CORALS EVOLUTION STUDIES

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The problem of origin and early evolution of corals is so far from final decision. The interest of zoologists and molecular biologists recently more and more focused to the study of the evolutionary history of solitary coral polyps, which has been based before almost wholly on the results of the paleontological descriptions of the skeletal structures of *Anthozoa*. Some scenario of more than one appearance of soft corals by the way of the decalcifying of their hard ancestors was suggested in USA (Buddemeier, Fautin, 1996; Stanley, Fautin, 2001). These scenarios have been connected also with the relatively fast change of atmospheric CO<sub>2</sub> concentration and in the same time with the reduction of calcium carbonates saturation in marine waters. By molecular data the divergence of *Scleractinia* from soft ancestors near end of Carboniferous has been discussed (Romano, Palumbi, 1996; Romano, Cairns, 2000).

The comparative morphogenetic study of modern and fossil sea anemones *Athenaria* shows this group of free-living solitary polyps as one of the primitive ancestral branch of *Anthozoa* with very variable but bilateral every time body plan (from pentamerous to decamerous). This is because they are characterized by the very simple mesenterial arrangement. The initial anthozoan type may be a small vermiform polyp with eight or twelve macronemes, elongate, cylindrical column divisible into regions, without basilar muscles and sphincter, something like the modern *Edwardsia* and *Halcampoides*. Well-defined external ribs of *Edwardsia* are connected with mesenterial muscles activity in the process of animal migration including the burrowing of sediments. Large number shallow and deep-water (more than 2000 m) *Edwardsia* and *Halcampoides* recently inhabit from Arctic to Antarctic waters. On the basis of internal and external morphogenetic features and behavior the families *Edwardsiidae* and *Halcampoidiidae* are greater affinities with a possible actinian – grade Precambrian polyp *Inaria* (after Gelhing, 1988), Cambrian *Mackenzia* (after Walcott, 1911) and *Conostichus* (after Chamberlain, 1971) from Carboniferous.

By the presence of eight protomesenteries polyp *Edwardsia* is similar also with polyp *Octocorallia* (including solitary *Taiaroa*) and it may be explained as the evidence of their genetic proximity and primary divergence. The ancestral anthozoan type may be understand as solitary free-living coral something like the polyp *Athenaria*. In order to reconstruct in detail the ways of sea anemones evolution it's necessary to analyze differences in nematocysts types together with molecular distance and morphogenetic data too.