

Biochemical characterization of short collagen-like otolin-1 involved in otoliths and otoconia formation

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Many distinctive proteins regulate the process of tissue mineralization. These macromolecules control the deposition of biominerals and have significant influence on the nucleation, growth, localization and morphology of growing crystals. Many of biomineralization related proteins are intrinsically disordered (IDP) considered as the major regulators of the process. However, significant role of matrix proteins involved in biomineralization cannot be neglected. These proteins provide an organic scaffold and surface for mineral deposition. In the formation of fish otoliths and higher vertebrates otoconia a short collagen-like protein otolin-1 is involved as the scaffold providing and tethering element of these calcium carbonate inner ear structures.

In this work we present the preliminary biochemical characterization of two homologs of otolin-1. *Danio rerio* and *Homo sapiens* otolin-1 was obtained as a recombinant protein from bacterial culture. The estimation of secondary structure content, the influence of calcium ions on the stability of these proteins and its oligomeric state show many differences in molecular properties between homologous proteins originated from these two species. Further investigation will be mostly focused on the resolution of protein structure.

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