



Molecular characterization and structure analysis of RPL10/QM-like protein from the red drum *Sciaenops ocellatus* (Sciaenidae)

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ABSTRACT. The QM-like gene encodes a ribosomal protein L10. Besides housekeeping roles in protein synthesis, QM-like proteins have multiple extraribosomal functions during cell growth, cell differentiation and apoptosis. We obtained the full-length cDNA of QM-like protein (designated as SoQM) from the salt water game fish *Sciaenops ocellatus*, using RACE-PCR. The sequence consists of 740 bp, encoding 215-amino acid residues with 24.60 kDa. The AA sequence of the SoQM protein contains a series of functional motifs that belong to the QM family signature, which is conserved among different species. The SoQM gene contains five introns and six exons. The expression pattern of SoQM as determined by RT-PCR indicated that SoQM mRNA was expressed in all tissues tested, including brain, gill, head-kidney, intestine, stomach, heart, spleen, blood, muscle, and gonads. The phylogenetic tree constructed with MEGA 4.0 showed that SoQM clusters together with that of other fish. It was found that the sequences of the SoQM gene are highly conserved, suggesting the fundamental and

critical functions of SoQM in *S. ocellatus*. The three-dimensional structure of the SoQM protein core domain (4~169) was predicted by the Swiss-Model program. Compared with QM proteins in other species, the main structure of SoQM protein was conserved, while the C-terminal domain was different from other QM-like proteins. Prediction of the three-dimensional structure of SoQM would provide valuable insight into the molecular basis of protein function, allowing an effective design of experiments, such as site-directed mutagenesis, studies of disease-related mutations or structure-based design of specific inhibitors.

Key words: SoQM; Molecular cloning; Structure analysis; Red drum