

Characterization of Melanin Concentrating Hormone Gene of Fish

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The cDNA and gene encoding the melanin concentrating hormone (MCH) precursor from the olive flounder, *Paralichthys olivaceus*, were identified by EST analysis and BAC screening library. The olive flounder MCH acts as the key regulator of adaptive skin pigmentation as like all fish MCHs. The olive flounder MCH gene has two introns with three exons, the structure of the bioactive peptide differs from those of mammals or other fishes in its N- and C- terminal regions. Pharmacologically, the olive flounder MCH and two truncated peptides were found to activate the human or rat MCH1 receptor and the MCH2 receptor but one of MCH derivatives to be inactive at the MCH2 receptor. Structure-activity relationship studies were undertaken and established the importance of several peptide features in the ligand recognition process by Fluorescence Image Plate Reader (FLIPR) assay. These data also show that truncation of part of the N terminus of flounder MCH restore its activity at MCHR2, suggesting that the flounder peptide may be a selective tool to differentiate MCHR1 from MCHR2 responses.