

Establishment of a novel in vivo inflammatory zebrafish animal model

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Recently, many studies have demonstrated zebrafish (*Danio rerio*) to be a valuable animal model for the investigation of bioactive compounds and molecular mechanisms of various diseases. Since 1965, the carrageenan-induced rat model of inflammation has been widely used as an animal model to investigate inflammatory mechanisms and anti-inflammatory activity of drugs and has been fully characterized. Rats have higher homology with humans than zebrafish; however, the use of rats as an animal model has certain limitations such as breeding, economy, efficiency, and higher dosage. In the present study, we attempted to establish an inflammatory animal model in zebrafish. To evaluate the inflammatory responses and inflammatory process, we evaluated the body edema, lethal dose, and histopathological progression after intraperitoneal (i.p.) administration of carrageenan in zebrafish. We also investigated the role of the highly conservative proteins, namely, heat shock protein isoforms, in this model. Our preliminary results showed that i.p. administration of carrageenan significantly increased body edema accompanied with changes in heat shock protein isoforms. Carrageenan-induced edema was significantly inhibited by i.p. administration of methylprednisolone. The present study provides a new in vivo inflammatory model for the screening of small volumes of drugs or compounds.