

Abstract Submitted  
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**Vascular wall shear stress in zebrafish model of early atherosclerosis**<sup>1</sup> WOORAK CHOI, Pohang Univ of Sci Tech, EUNSEOK SEO, Daegu Gyeongbuk Institute of Science and Technology, EUNSEOP YEOM, School of Mechanical Engineering, Pusan National University, SANG JOON LEE, Pohang Univ of Sci Tech — Although atherosclerosis is a multifactorial disease, the role of hemodynamic force has strong influence on the outbreak of the disease. Low and oscillating wall shear stress (WSS) is associated with the incidence of atherosclerosis. Many researchers have investigated relationships between WSS and the occurrence of atherosclerosis using *in vitro* and *in vivo* models. However, these models possess technological limitations in mimicking real biophysiological conditions and monitoring the temporal progression of atherosclerosis. In this study, a hypercholesterolaemic zebrafish model was established as a novel model to resolve these technical limitations. WSS in blood vessels of 15 days post-fertilisation zebrafish was measured using a micro PIV technique, and the spatial distribution of lipids inside blood vessels was quantitatively visualized using a confocal microscopy. As a result, lipids are mainly deposited in the regions of low WSS. The oscillating WSS is not induced by blood flows in the zebrafish disease model. The present hypercholesterolaemic zebrafish model would be useful for understanding the effect of WSS on the early stage of atherosclerosis.

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