ABSTRACT

Dianesepta, Nadine. 2015. Effects of Swimming Exercise on Lowering Aorta Wall Thickness in White-Male Rats (*Rattus* norvegicus) that are Exposed with Cigarette Smoke, Final Assignment, School of Medicine Brawijaya University. Supervisor : (1) dr. Danik Agustin Purwantiningrum, M.Kes. (2) dr. Kenty Wantri Anita, M.Kes, Sp.PA

Arterial wall thickening is a complex process that involves hypertrophy and/or hyperplasia on smooth muscle cells, also change in properties of collagen and elastin in tunica media. Nicotine is one of compounds in cigarette smoke that contain harmful property for blood vessels by increasing oxidative stress. Proper antioxidant is needed to reduce oxidative stress that triggers arterial wall thickening. Swimming exercise with proper intensity is expected to reduce oxidative stress level in circulation. Therefore, the size of aorta wall thickness in white-male rats (Rattus norvegicus) that are exposed to cigarette smoke is expected to be reduced. This study is using post-test only group design on white male rats (Rattus norvegicus) Wistar strain divided into 4 groups. Negative group, positive group (cigarette smoke exposure only), and two cigarette smoke exposed groups treated by swimming exercise with low and heavy intensity. After 8 weeks of treatment, aorta is taken by dissection and observed under 400x magnifications, and measures tunica intima to media as measurement index with micrometer measuring software. One-Way ANOVA analysis shows no significant difference between groups ($p>0,005$). Descriptive analysis shows tendency of reduced arterial wall thickness in groups with swimming exercie. Effect size Cohen d-type tests on group with cigarette smoke exposure only shows moderate to large effects, and groups with swimming exercise shows moderate effect to arterial wall thickness. Group with heavy swimming intensity shows tendency of the most reduced wall thickness between two groups with swimming exercise.

Key Words: Cigarette Smoke, Intima-Media Thickness, Aorta, Swimming Exercise