

**ABSTRACT*****Expression of Glucose Transporter-1 (GLUT1) in Rat's Brain  
(Rattus norvegicus) Due to Physical Stress*****Hayuris Kinandita Setiawan**

*Stress can lead positive or negative effect on the body, depending on the duration and intensity of stress. Prolonged stress will cause neurodegenerative disease or cognitive impairment through disruption in brain neurotransmitter systems, biomolecular level of the brain, and brain metabolism. Potential Regulation of Glucose Transporter-1 (GLUT1) in the blood-brain barrier responds to various stress-related brain pathological conditions. The purpose of this study is to explain the influence of physical stress duration on the expression of glucose transporter-1 in the brains of rat. This study used 30 rats (Rattus norvegicus) male wistar strain which divided into 3 groups: control group ( $K_0$ ), the treatment of acute physical stress ( $K_1$ ) and chronic physical stress ( $K_2$ ). Examination was conducted on GLUT1 expression in endothelial cells and glial cells of the brain that be observed using immunohistochemical staining techniques. The results showed that there was depletion of GLUT1 expression in brain endothelial due to acute physical stress and chronic physical stress. GLUT1 expression depletion in brain endothelial chronic physical stress group was greater than acute physical stress group with  $p < 0.05$ . Increased expression of brain glial cell's GLUT1 are not significant due to acute physical stress with  $p > 0.05$  while on chronic physical stress group there was a significant depletion in GLUT1 expression with value of  $p < 0.05$ .*

*Keywords: GLUT1 (glucose transporter-1), physical stress, brain*