ABSTRACT

Effect of Music on Decreasing Serum Cortisol Level and Brain Morphology of *Hypothalamus* and *Basolateral Amygdala* on Mice (*Mus musculus*) Stress Model

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Stress is known as a body response from internal and external stressor to maintain homeostasis of the body. Stress may cause disease getting worst or trigger disease. Stres can stimulate *adrenal cortex* to release cortisol and other streroids. Music can direct behaviour toward calm with divert response in limbic system. If music can be persued for stress treatment, the application will be easy, safe, and economical.

The aim of this study was to investigate the effect of music on stress related behaviours as well as cortisol level and brain morphology on mice stress model. Thirty mice were devided into five groups randomly, which are control, stress, stress with classical, javanese and rock music group. Music was given after footshock stress induced. Footshock was given daily for 10 minutes with interval 10 seconds on and 30 seconds off for 14 days. Stress parameter was measured on day 0 (as baseline) and day 14^{th} (as evaluation) with Elevated Plus Maze (EPM) and Light Dark Box (LDB) test. Cortisol level was evaluated by Enzym Linked Immunosorbent Assay (ELISA) and mice brain morphology was evaluated by *haematoxyllin eosin* staining.

Classical and gamelan music was significantly decreased stress condition in both stress parameter EPM and LDB ($p<0.05$). But rock music wasn't significantly decreased stress condition ($p<0.05$) in that both stress parameter. Serum cortisol level was significantly decreased by classical music treatment ($p<0.05$). Classical and javanese music was increase the number of cell in *hypothalamus* and *basolateral amygdala* by comparing with stress group, but has no effect on the recovery of injured normal cells. These finding of the present study indicated that classical music was significantly decreased stress condition on mice.

Keyword: stress, footshock, serum cortisol level, EPM, LDB, classical music, rock music, *basolateral amygdala*, *hypothalamus*.