

ABSTRACT

Stress Barrier On Synaptogenesis Inhibition with Footshock Induced Stress Model in Mice (*Mus musculus*)

Stressed is a respons of the body from stressor from internal or eksternal from the body. Respons the body for homeostatis which are fisiological, physical and behaviour. The present study was designed to investigate the stress barrier pass synaptogenesis inhibition with footshock induced stress model in mice. Stressor pass through spinal cord toward to brain. Morphine also know one of the mekanisme is supress nosiseptive spinal in dorsal horn, inhibition glutamat and neurokinin and blocked Ca^{2+} Channel. Fourty mice were divided into five groups randomly which are normal, stress, stress with morphine 1mg/kgBB, stress with morphine 3mg/kgBB and stress with morphine 10mg/kgBB. Morphine administred 2 hour before induction of stress. Mice were induced in stress condition by footshock with 0.15mA on 60 Volt. Footshock was given daily for 10 minutes with 30 seconds interval for 14 days. Parameter of stress was measured on day 0 (baseline) and 14th day with elevated plus maze (EPM) and conditioned place preference (CPP). Footshock able make stress in mice indicated significantly increased score CPP ($p=0.002$) and EPM ($p=0.004$) on group stress consideration group normal.

Interesting case on this study used morphine as pharmacology model, who had ability significantly decreased stress behaviour. Stress parameter of EPM (Morphine 1mg/kgBB $F_{(3,24)} = 5.045$, $p = 0.012$), in (Morphine 3mg/kgBB $F_{(3,24)} = 5.045$, $p = 0.004$) and (Morphine 10mg/kgBB $F_{(3,24)} = 5.045$, $p = 0.002$). It was also in CPP parameter of stress, morphine 1, 3 and 10mg/kgBB significantly decreased stress behaviours (Morphine 1mg/kgBB $F_{(3,24)} = 8.756$, $p = 0.002$), also in (Morphine 3mg/kgBB $F_{(3,24)} = 8.756$, $p < 0.001$) and (Morphine 10mg/kgBB $F_{(3,24)} = 8.756$, $p < 0.001$). Decreased stress behaviour follow with change neuron morphology. Spinal cord mice were evaluated by haematoxyllin-eosin staining and immunostaining with anti-synaptophysin on dorsal horn. Morphine in 3 different doses also significantly decreased the number of neuron that expressed of anti-synaptophysin existing in dorsal horn part of spinal cord. On this study the conclusion is morphine administred on 1, 3 and 10mg/kgBB able decreased stress behaviours also change neuron morphology and decreased neuron while growing.

Keyword : stress, synaptogenesis, morphine, footshock, EPM, CPP, anti-synaptophysin, spinal cord, dorsal horn.