

## INTISARI

Stres mempunyai kaitan dengan serotonin. Serotonin merupakan neurotransmitter yang paling berperan dalam patofisiologi depresi. Serotonin di dalam tubuh terdapat dalam usus, yakni di dalam sel enterokromafin yang berperan dalam mengendalikan gerakan usus. Penelitian menunjukkan bahwa pisang mengandung serotonin dan prekursor serotonin, yaitu triptofan dan 5-HTP. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian ekstrak kulit pisang terhadap imunoreaktivitas serotonin di sel epitel mukosa usus dan daya tahan pasca stress pada tikus Wistar (*Rattus norvegicus*) jantan pasca diinduksi stress.

Sebanyak 24 ekor tikus Wistar jantan, umur 8-10 minggu, berat 200-300 gram, dibagi menjadi 6 kelompok: kelompok kontrol negatif (Kelompok I, n=4), kelompok kontrol positif (Kelompok II, n=4) diinduksi stress *electrical footshock*, kelompok kontrol positif (kelompok III, n=4) diberi ekstrak kulit pisang kepok, kelompok ekstrak kulit pisang kepok dosis 70 mg/kgBB dan diinduksi stres *electrical footshock*. (Kelompok IV: n=4), kelompok ekstrak kulit pisang kepok dosis 140 mg/kgBB dan diinduksi stres *electrical footshock*. (Kelompok V: n=4), kelompok ekstrak kulit pisang kepok dosis 280 mg/kgBB dan diinduksi stres *electrical footshock*. (Kelompok VI: n=4). Stresor diberikan pada tikus menggunakan metode *Electrical Footshock*. Selanjutnya dilakukan *Test Suspension Test* untuk menguji efek antidepresan dengan menilai skor *immobility time*. Imunoreaktivitas serotonin dinilai menggunakan teknik *Immunohistochemistry* (IHC) kemudian dibaca menggunakan *software IHC reader* yang menilai berdasarkan serapan warna.

Hasil penilaian rerata *immobility time* didapatkan kelompok I ( $81,00 \pm 13,59$ ), kelompok II ( $102,50 \pm 8,06$ ), kelompok III ( $82,00 \pm 10,95$ ), kelompok IV ( $93,50 \pm 4,12$ ), kelompok V ( $81,00 \pm 13,14$ ), dan kelompok VI ( $46,75 \pm 22,91$ ). Kelompok II memiliki nilai rerata tertinggi dan kelompok VI memiliki nilai rerata terendah serta terdapat perbedaan yang bermakna. Hasil penilaian rerata *H-score* didapatkan kelompok I ( $229,16 \pm 1,36$ ), kelompok II ( $199,66 \pm 1,63$ ), kelompok III ( $250,39 \pm 4,63$ ), kelompok IV ( $235,72 \pm 3,81$ ), kelompok V ( $242,12 \pm 3,36$ ), dan kelompok VI ( $301,65 \pm 4,63$ ). Kelompok VI menunjukkan imunoreaktivitas tertinggi dibanding kelompok lainnya dan terdapat perbedaan yang bermakna ( $p=0,000$ ). Pemberian ekstrak kulit pisang kepok kuning dengan dosis tinggi (280mg/kgBB) terbukti dapat memicu imunoreaktivitas serotonin yang lebih tinggi di sel epitel mukosa kolon sigmoid dibandingkan dengan ekstrak kulit pisang kepok kuning dosis rendah (70mg/kgBB) dan dosis sedang (140mg/kgBB). Terdapat perbedaan yang signifikan terhadap daya tahan stres pada tikus yang diberi ekstrak kulit pisang kepok kuning dosis tinggi, dosis sedang, dosis rendah maupun kelompok kontrol.

**Kata kunci:** stres, *electrical footshock*, *test suspension tail*, *immobility time*, imunoreaktivitas serotonin, ekstrak kulit pisang.

## ABSTRACT

Stress has something to do with serotonin. Serotonin is the most important neurotransmitter in the pathophysiology of depression. Serotonin in the body is present in the intestine, ie inside the enterochromafin cells that play a role in controlling bowel movements. Research shows that bananas contain serotonin and serotonin precursors, namely tryptophan and 5-HTP. This study aims to determine the effect of banana skin extract on serotonin immunoreactivity in intestinal mucosal epithelial cells and post stress post-stroke in male Wistar (*Rattus norvegicus*) mice induced by stress.

Twenty-four male Wistar rats, aged 8-10 weeks, weight 200-300 grams, were divided into 6 groups: negative control group (Group I, n = 4), positive control group (Group II, n = 4) induced stress electrical Footshock, positive control group (group III, n = 4) were given banana peel extract, banana peel extract group dose 70 mg / kgBB and electrical stress-stressed induction (Group IV: n = 4), banana peel skin extract group dose 140 mg / kgBB and electrical stress-booster induction (Group V: n = 4), banana peel extract group dose 280 mg / kgBB and electrical stress-stressed induction (Group VI: n = 4). Stressors were given to mice using the Electrical Footshock method. Furthermore, the Test Suspension Test was conducted to test the effect of antidepressants by assessing the immobility time scores. Immunoactivity of serotonin was assessed using the Immunohistochemistry (IHC) technique then read using IHC reader software that assessed by color uptake.

The results of the mean evaluation of immolity time were found in groups I ( $81.00 \pm 13.59$ ), Group II ( $102.50 \pm 8.06$ ), Group III ( $82.00 \pm 10.95$ ), Group IV ( $93.50 \pm 4, 12$ ), group V ( $81.00 \pm 13.14$ ), and group VI ( $46.75 \pm 22.91$ ). Group II has the highest mean value and group VI has the lowest mean value and there are significant differences. The result of H-score average score was obtained by group I ( $229,16 \pm 1,36$ ), group II ( $199,66 \pm 1,63$ ), group III ( $250,39 \pm 4,63$ ), group IV ( $235,72 \pm 3.81$ ), group V ( $242.12 \pm 3.36$ ), and group VI ( $301.65 \pm 4.63$ ). Group VI showed the highest immunoreactivity compared to the lanin group and there was a significant difference ( $p = 0.000$ ). Administration of high-dose yellow banana peel extract (280mg / kgBW) was shown to trigger higher serotonin immunoreactivity in sigmoid colonic mucosal epithelial cells compared with low-dose yellow banana peel extract (70mg / kgBW) and moderate dose (140mg / kgBW) . There were significant differences in stress durability in mice given high-dose yellow banana peel skin extract, moderate dose, low dose or control group.

Keywords: stress, electrical footshock, test suspension tail, immobility time, serotonin immunoreactivity, banana peel extract.