

INTISARI

Latar Belakang: Stres kronis meningkatkan aktivasi aksis *hypothalamic pituitary adrenal* (HPA) dan aksis *sympathetic adrenal medullary* (SAM) sehingga terjadi resistensi glukokortikoid dan mempengaruhi sistem imun. Resistensi glukokortikoid membuat perubahan perilaku makan sehingga menimbulkan resiko peningkatan deposisi lemak visceral yang membuat BB mudah meningkat. Hal ini juga berdampak pada peningkatan sitokin pro-inflamasi seperti TNF- α dalam plasma darah. Peningkatan TNF- α dapat menyebabkan peningkatan ROS sehingga menyebabkan inflamasi sistemik. Inflamasi ini juga berlangsung di hepar dan menyebabkan kerusakan seperti kongesti sinusoid bahkan nekrosis sel hepatosit. Abon kulit pisang (AKP) kepok kuning (*Musa balbisiana colla*) diketahui mengandung sumber alami prekursor serotonin potensial seperti triptofan (Trp), serat pangan, dan antioksidan lainnya yang mampu menghambat peningkatan produksi sitokin pro-inflamasi, berperan sebagai hepatoprotektor dan mampu mengontrol nafsu makan. Namun, penelitian tentang pengaruh AKP kepok kuning terhadap TNF- α , kerusakan jaringan hepar dan berat badan belum dikaji secara mendalam.

Tujuan: Penelitian ini bertujuan untuk mengetahui pengaruh AKP kepok kuning (*Musa balbisiana colla*) terhadap kadar TNF- α , gambaran histologi hepar dan perubahan berat badan pada tikus wistar (*Rattus norvegicus*) jantan yang diinduksi stress kronik.

Metode: Penelitian ini termasuk kategori *quasy experimental design* menggunakan rancangan penelitian *pretest-posttest control group design* dengan subjek tikus wistar (*Rattus norvegicus*) jantan dewasa umur 2 bulan \pm 1minggu dengan berat 200-300 gram sebanyak 25 ekor yang terbagi menjadi 5 kelompok. 1 Kelompok control tanpa *chronic mild stress* (CMS) (P1), 1 kelompok dengan CMS (P2) dan 3 kelompok dengan CMS yang diintervensi AKP kepok kuning masing-masing dengan dosis 15% (P3), 30% (P4) dan 60% (P5). Selama 1,5 bulan tikus diinduksi CMS dengan pengecekan berat badan setiap minggu, lalu diukur kadar TNF- α plasma *pre-test* dengan menggunakan *ELISA* kemudian diintervensi dengan pemberian AKP kepok kuning selama 1 bulan dan diukur berat badan setiap minggu. Setelahnya, dilakukan pengukuran kadar TNF- α *post-test*, dan terminasi hewan coba untuk memeriksa histopatologi hepar dengan menggunakan *Hematoxyclin-Eosin*.

Hasil: Peningkatan berat badan terjadi selama induksi CMS hampir disemua kelompok dan terjadi penurunan berat badan setelah intervensi AKP kepok kuning

terutama pada kelompok tikus yang diinduksi stress dengan pemberian AKP kepok kuning dosis 30% (P4) dan 60% (P5) yaitu masing-masing sebanyak -27.0 ± 19.04 dan -25.80 ± 8.50 dibandingkan dengan kelompok kontrol tikus yang diinduksi CMS tanpa pemberian AKP (P2). Selain itu, penelitian ini berhasil menunjukkan gambaran histologi nekrosis dan kongesti yang lebih baik pada kelompok CMS dengan pemberian AKP dosis 60% (P5). Selanjutnya, kadar TNF- α plasma pada kelompok CMS dengan AKP dosis 30% (P4) mengindikasikan penurunan yang signifikan.

Kesimpulan: Komposisi nutrisi dalam AKP kepok kuning menunjukkan adanya potensi dalam penurunan berat yang sempat meningkat oleh karena induksi CMS. Selain itu, bersifat protektif terhadap organ hepar yang mengalami nekrotik maupun kongesti akibat induksi CMS, dan menurunkan kadar TNF- α . Proporsi AKP 30% adalah yang terbaik dibandingkan proporsi 15% dan 60%.

Kata Kunci : HPA, SAM, ROS, CMS, AKP, triptofan, serotonin, TNF- α , berat badan, hepar

ABSTRACT

Background: Chronic stress increases the activation of the hypothalamic pituitary adrenal (HPA) and sympathetic adrenal medullary (SAM) axis, resulting in glucocorticoid resistance and affecting the immune system. Glucocorticoid resistance makes eating behavior changes so that it poses an increased risk of visceral fat deposition which makes it easy to increase body weight. This also has an impact on increasing pro-inflammatory cytokines such as TNF- α in blood plasma. Increased TNF- α which can cause an increase in ROS causing systemic inflammation. This inflammation also takes place in the liver and causes damage such as sinusoid congestion and even necrosis of hepatocyte cells. banana peel floss (BPF) kepok kuning (*Musa balbisiana colla*) is known to contain natural sources of potential serotonin precursors such as tryptophan (Trp), dietary fiber, and other antioxidants that are able to inhibit the increase in the production of pro-inflammatory cytokines, act as hepatoprotectors and are able to control appetite. However, research on the effect of yellow kepok BPS on TNF- α , liver tissue damage and body weight has not been studied in depth.

Objective: This study aimed to determine the effect of banana peel floss (BPF) kepok kuning (*Musa balbisiana colla*) on TNF- levels, liver histology and changes in body weight in male wistar (*Rattus norvegicus*) rats induced by chronic stress.

Methods: This study belongs to the quasy experimental design category using a pretest-posttest control group design with the subject of adult male Wistar rats (*Rattus norvegicus*) aged 2 months \pm 1 week weighing 200-300 grams as many as 25 animals which were divided into 5 groups. 1 control group without chronic mild stress (CMS) (P1), 1 group with CMS (P2) and 3 groups with CMS intervention with BPF kepok kuning with doses of 15% (P3), 30% (P4) and 60% (P5). For 1.5 months the rats were induced by CMS by checking their body weight every week, then the pre-test plasma TNF- α levels were measured using ELISA then intervened by giving BPS kepok kuning for 1 month and body weight was measured every week. After that, the post-test TNF- α levels were measured, and the experimental animals were terminated to examine liver histopathology using Hematoxyclin-Eosin.

Results: Weight gain occurred during CMS induction in almost all groups. However there was a significant decrease in body weight after the BPF kepok kuning intervention, especially in the group of rats that were induced by stress by giving

BPF kepok kuning doses of 30% (P4) and 60% (P5), which were -27.0 ± 19.04 and -25.80 ± 8.50 respectively compared to control group of rats induced by CMS without BPF kepok kuning (P2). In addition, this study succeeded in showing a better histological picture of necrosis and congestion in the CMS group with BPF 60% (P5). Furthermore, plasma TNF- α levels in the CMS group with 30% dose of BPF (P4) indicated a significant decrease.

Conclusion: The composition of nutrients in BPF kepok kuning shows the potential for weight loss which had increased due to CMS induction. In addition, it is protective against necrotic or congested liver organs due to CMS induction, and reduces TNF- α levels. AKP proportion of 30% is the best compared to the proportions of 15% and 60%.

Keywords: HPA, SAM, ROS, CMS, BPS, tryptophan, serotonin, TNF- α , body weight, liver