

ABSTRAK

Latar belakang : Sindrom metabolik yang diinduksi oleh diet “*Western*” *purified atherogenic* menyebabkan resistensi insulin dan kerusakan sel β pankreas. *α -mangostin* dari ekstrak *pericarp Garcinia mangostana Linn* dianggap potensial untuk mengatasi sindrom metabolik, tetapi belum ada bukti yang menunjukkan pengaruhnya terhadap kondisi sel β pankreas. Latihan fisik juga dapat meningkatkan sensitivitas insulin dan fungsi sel β pankreas.

Tujuan : Membuktikan adanya perbedaan dalam gambaran histopatologi pankreas tikus wistar Wistar yang diinduksi diet “*Western*” *purified atherogenic* dan ditambahkan ekstrak *pericarp Garcinia mangostana Linn* dengan latihan fisik.

Metode : Penelitian *True Experimental* untuk membandingkan efek pemberian perlakuan pada kelompok K-, K+, dan P menggunakan desain *The Randomized Post-Test Only Control Trial* (RCT). Sampel penelitian adalah tikus Wistar jantan berusia 6-8 minggu.

Hasil : Kelompok tikus yang diinduksi diet “*Western*” *purified atherogenic* saja mengalami kematian sebelum penelitian berakhir, dengan perubahan histopatologi pada *islet Langerhans* pankreas, termasuk deposisi amiloid, penurunan jumlah sel, degenerasi sel, dan bentuk sel yang tidak normal. Namun, kelompok tikus lain yang juga diinduksi diet “*Western*” *purified atherogenic* namun ditambahkan pemberian ekstrak *pericarp Garcinia mangostana Linn* dan melakukan latihan fisik menunjukkan histologi yang normal, serupa dengan kelompok tikus yang tidak diinduksi diet “*Western*” *purified atherogenic* dan melakukan latihan fisik. Ini menunjukkan bahwa menerapkan latihan fisik dan mengonsumsi ekstrak *pericarp Garcinia mangostana Linn* mungkin memiliki peran dalam pencegahan kerusakan *islet Langerhans* pankreas.

Kesimpulan : Pemberian diet standar bersama latihan fisik; pemberian diet “*Western*” *purified atherogenic*; dan kombinasi diet “*Western*” *purified atherogenic*, ekstrak *pericarp Garcinia mangostana Linn*, dan latihan fisik memberikan perbedaan gambaran histologi pankreas pada tikus wistar.

Kata Kunci : Ekstrak *Pericarp Garcinia mangostana Linn*, latihan fisik, resistensi insulin, Sindrom metabolik, tikus Wistar.

ABSTRACT

Background: *Metabolic syndrome induced by a purified atherogenic "Western" diet leads to insulin resistance and damage to pancreatic β cells. α -mangostin from *Garcinia mangostana* Linn pericarp extract is considered potential in addressing metabolic syndrome, yet there is no evidence demonstrating its influence on pancreatic β cell condition. Physical exercise can also enhance insulin sensitivity and pancreatic β cell function.*

Objective: *To demonstrate differences in pancreatic histopathology in Wistar rats induced with a purified atherogenic "Western" diet and supplemented with *Garcinia Mangostana* Linn pericarp extract along with physical exercise.*

Method: *True Experimental research to compare treatment effects on groups K-, K+, and P using The Randomized Post-Test Only Control Trial (RCT) design. Research samples were male Wistar rats aged 6-8 weeks.*

Results: *The group of rats induced solely with the purified atherogenic "Western" diet experienced mortality before the study's conclusion, with histopathological changes in pancreatic islets of Langerhans, including amyloid deposition, decreased cell count, cell degeneration, and abnormal cell shapes. However, another group of rats induced with the purified atherogenic "Western" diet but supplemented with *Garcinia Mangostana* Linn pericarp extract and engaged in physical exercise exhibited normal histology, similar to the group of rats not induced with the purified atherogenic "Western" diet but involved in physical exercise. This suggests that implementing physical exercise and consuming *Garcinia Mangostana* Linn pericarp extract may play a role in preventing damage to pancreatic islets of Langerhans.*

Conclusion: *Administering a standard diet with physical exercise; administering a purified atherogenic "Western" diet; and the combination of a purified atherogenic "Western" diet, *Garcinia Mangostana* Linn pericarp extract, and physical exercise yield differences in pancreatic histological profiles in Wistar rats.*

Keywords: **Garcinia Mangostana* Linn pericarp extract, physical exercise, insulin resistance, metabolic syndrome, Wistar rats.*