Efek 6-Gingerol Terhadap Penurunan Akumulasi Lemak dan Stres Oksidatif di Jaringan Pankreas Tikus Dengan Sindrom Metabolik = The effect of 6-Gingerol in reducing fat accumulation and oxidative stress in pancreatic tissues of metabolic syndrome rats

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Abstrak

Sekitar 35% dari 901 orang dewasa yang menjalani pemeriksaan kesehatan secara rutin ditemukan mengalami NAFPD (nonalcoholic fatty pancreas disease). NAFPD berkaitan dengan manifestasi klinik (sindrom metabolik) MetS, adapun terapi yang diberikan sesuai dengan gejalanya seperti antihipertensi, statin, metformin dan faktor komorbid MetS, sehingga mungkin terjadi polifarmasi akibat multiterapi pengobatan. Dalam hal ini dibutuhkan obat tunggal yang dapat memperbaiki NAFPD pada tikus MetS salah satu kandidatnya yaitu 6-Gingerol. Tujuan dari penelitian ini untuk menganalisis efektifitas 6-Gingerol terhadap NAFPD akibat MetS melalui stress oksidatif pada organ pankreas tikus yang diinduksi HFD + Fruktosa 55% dan Streptozotocin 22mg/kg selama 8 minggu. Tikus yang mengalami sindrom metabolik diterapi dengan 6-Gingerol dosis 50,100 dan 200mg/kg selama 8 minggu. Setelah mencapai akhir terapi, serum dan jaringan pankreas di ambil dan di analisis kadar (tumor necrosis factor alpha) TNF-alpha, (interleukin-6) IL-6, (malondialdehyde) MDA, (glutathione peroxidase) GPx, amilase, akumulais lemak, ekspresi sel alfa dam beta pankreas sebagai parameter NAFPD. Hasil analisis menunjukan bahwa pemberian 6-Gingerol tidak dapat menurunkan aktivitas amilase serum, MDA, ekspresi mRNA IL-6, namun dapat meningkatkan aktivitas GPx, mengurangi akumulasi lemak, dan meningkatkan ekspresi insulin dan glukagon. Sehingga 6-Gingerol memiliki potensi sebagai agen terapeutik untuk memperbaiki NAFPD pada tikus MetS.

.....About 35% of 901 adults who underwent routine health checks were found to have (nonalcoholic fatty pancreas disease) NAFPD. NAFPD is related to the clinical manifestations of (metabolic syndrome) MetS, while the therapy given is according to the symptoms. The therapies include: antihypertensives, statins, metformin, and MetS comorbid factors. Polypharmacy may occur as a result of multitherapy treatment. In this case, a single drug, namely 6-gingerol, is needed to improve NAFPD in the MetS rats. The aim of this study was to analyze the effectiveness of 6-Gingerol against MetS-induced NAFPD through oxidative stress in the pancreas of rats induced by HFD + Fructose 55% and Streptozotocin 22mg/kg for 8 weeks. Metabolic syndrome rats were treated with 6-gingerol doses of 50, 100, and 200 mg/kg for 8 weeks. After reaching the end of therapy, serum and pancreatic tissue were collected and analyzed for levels of (tumor necrosis factor alpha) TNF-Î±, (interleukin-6) IL-6, (malondialdehyde) MDA, (glutathione peroxidase) GPx, amylase, fat accumulation, cell expression pancreatic alpha and beta as parameters of NAFPD. The results of analysis showed that administering 6-gingerol did not significantly reduce serum amylase activity, MDA, the relative expression of IL-6, but it increased GPX activity, reduced fat accumulation, and increased insulin and glucagon expression in pancreatic tissue. Thus 6-Gingerol has the potential as a therapeutic agent to improve NAFPD in the MetS.