Mekanisme kerja sambiloto dalam metabolisme glukosa pada subjek normal dan prediabetes: kajian terhadap GLP-1, insulin puasa, insulin 2 jam pascabeban dan HOMA-IR = Mechanism of action sambiloto on glucose metabolism in normal and prediabetes subjects: focused on GLP-1, fasting insulin, 2 hour postload insulin, and HOMA-IR

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Abstrak

Saat ini penyandang diabetes melitus tipe 2 (DMT2) sudah mencapai 415 juta dari seluruh penduduk dunia. Pengobatan yang tersedia masih memiliki banyak kelemahan sehingga dibutuhkan pengembangan obat-obat baru. Salah satu strategi pengobatan adalah dengan memperbaiki efek inkretin. Banyak fitofarmaka yang diketahui memiliki efek hipoglikemik. Ekstrak sambiloto sudah lama diketahui memiliki khasiat dalam pengobatan DMT2 dan digunakan secara tradisional di masyarakat. Studi ini bertujuan untuk mengetahui mekanisme kerja ekstrak sambiloto dalam kaitannya memperbaiki efek inkretin. Studi ini merupakan uji klinis tersamar ganda menggunakan desain cross over pada subjek normal dan prediabetes yang diberikan intervensi ekstrak sambiloto selama 14 hari dibandingkan dengan plasebo. Dilakukan pemeriksaan kadar GLP-1, insulin puasa, insulin 2 jam pascabeban, HOMA-IR, glukosa darah puasa, glukosa darah 2 jam pascabeban, enzim DPP-4, dan glycated albumin sebelum dan sesudah intervensi. Dilakukan analisis bivariat dan analisis lajur. Tujuh puluh tiga subjek (normal 38 dan prediabetes 35) dianalisis per protokol. Didapatkan perbaikan efek inkretin yang ditandai dengan peningkatan kadar GLP-1 yang bermakna setelah pemberian ekstrak sambiloto selama 2 minggu pada subjek prediabetes. Ekstrak sambiloto tidak menghambat enzim DPP-4 pada kelompok normal dan prediabetes. Berdasarkan analisis lajur didapatkan bahwa ekstrak sambiloto dapat berperan dalam metabolisme glukosa melalui jalur GLP-1 dan jalur resistensi insulin. Ekstrak sambiloto meningkatkan kadar GLP-1 tanpa menghambat enzim DPP-4 pada subjek prediabetes. Berdasarkan analisis lajur ekstrak sambiloto dapat memperbaiki resistensi insulin pada subjek prediabetes.

.....There are 415 million type 2 diabetes mellitus (T2DM) patients in the world. Currently available antidiabetic drugs still have their own weakness so there is a need to develop better drugs. One of the newer strategies of diabetes therapy is through restoring the effect of incretin. Many phytochemicals have been known to have hypoglycemic effect. Sambiloto extract is known to have effect for T2DM therapy and has been used traditionally in the community. This study aims to discover the mechanism of sambiloto extract in restoring incretin effect. This study was a double blinded clinical trial using cross over design in normal and prediabetes subjects treated with sambiloto extract for 14 days compared with placebo. GLP- 1, fasting insulin, 2 hour postload insulin, HOMA-IR, fasting blood glucose, 2 hour postload blood glucose, DPP-4, and glycated albumin were measured before and after intervention. Bivariate and path analysis were applied to see the relationship. Seventy-three subjects (38 normal and 35 prediabetes) were analyzed according to protocol. Restoration of incretin effect was marked by significant increase of GLP-1 concentration after administration of sambiloto extract for 2 weeks in prediabetes subjects. Sambiloto extract did not inhibit DPP-4 enzyme in normal and prediabetes subjects. Path analysis had shown that sambiloto extract can affect glucose metabolism through GLP-1 pathway and insulin resistance pathway. Sambiloto extract increased

GLP-1 concentration without inhibiting DPP-4 enzyme in prediabetes subjects. From path analysis showed that sambiloto extract can also ameliorate insulin resistance in prediabetes subjects.