

## INTISARI

**Latar belakang.** Diabetes mellitus adalah suatu sindrom metabolik ditandai dengan hiperglikemia. Prevalensi DM-II meningkat dari tahun demi tahun. Penanganan lini pertama untuk DM-II adalah modifikasi gaya hidup, terutama modifikasi pola makan. Gembili (*Dioscorea esculenta* L.) adalah tanaman sejenis umbi yang memiliki kadar serat dan pati resisten yang tinggi. Serat dan pati resisten akan difermentasi menjadi *Short chain fatty acid* (SCFA) oleh *Eubacterium rectale*. *Short chain fatty acid* memiliki efek antihiperglikemia dan diharapkan dapat menurunkan kadar glukosa darah puasa dan meningkatkan ekspresi *Glucagon-like peptide 1* (GLP1) pada tikus model DM-II.

**Tujuan Penelitian.** Mengevaluasi pengaruh pemberian tepung gembili dan *Eubacterium rectale* terhadap kadar glukosa darah puasa dan ekspresi gen GLP1 di ileum tikus wistar model DM-II.

**Metode.** Rancangan penelitian ini adalah kuasi eksperimental *posttest only control group*. 25 ekor tikus Wistar jantan dikelompokkan menjadi 5 kelompok yang terdiri dari: (1) kelompok tikus sehat, (2) kelompok tikus DM tanpa perlakuan, (3) kelompok tikus DM diberi *Eubacterium rectale* 10<sup>8</sup>CFU/hari, (4) kelompok tikus DM diberi tepung gembili 2,5g/hari, (5) kelompok tikus DM diberi kombinasi tepung gembili dan *Eubacterium rectale*. Kelompok dua sampai dengan 5 diinduksi DM-II dengan STZ 60 mg/kgBB dan NA 120 mg/kgBB sebelum diberi perlakuan. Perlakuan diberikan selama 28 hari. Kadar glukosa darah puasa diperiksa dengan metode kolorimetrik enzimatis GOD-PAP. Ekspresi gen GLP1 diperiksa melalui *Real-time* PCR (RT-PCR). Data dilaporkan dalam bentuk rerata ± simpang baku dan dianalisis menggunakan *one-way* ANOVA dengan tingkat signifikansi  $p < 0,05$ .

**Hasil.** Kadar glukosa darah puasa mengalami penurunan pada kelompok yang diberi perlakuan (K3-K5) dan berbeda makna ( $p < 0,05$ ). Ekspresi gen GLP1 pada kelompok yang diberi *Eubacterium rectale* saja paling tinggi dibandingkan kelompok lainnya, namun tidak berbeda makna ( $p > 0,05$ ).

**Kesimpulan.** Pemberian *Eubacterium rectale* 10<sup>8</sup>CFU/hari dan tepung gembili 2,5g/hari dapat pada tikus wistar model DM-II dapat meningkatkan ekspresi gen GLP1 di ileum.

Kata kunci: Gembili, *Eubacterium rectale*, DM-II, GLP1, Glukosa darah puasa.

#### ABSTRACT

**Background.** Diabetes mellitus (DM) is a metabolic syndrome that manifest with hyperglycemia. The prevalence DM-II has increased year after year. The first line therapy of DM-II is lifestyle modification, focused on dietary change. Gembili (*Dioscorea esculenta* L.) is kinds of yam that contains high dietary fiber and resistant starch. Dietary fiber and resistant starch would be fermented to *Short chain fatty acid* (SCFA) by *Eubacterium rectale*. *Short chain fatty acid* has *antihyperglycemic effect and is expected to decrease* fasting blood sugar and increase GLP1 expression in ileum of type 2 diabetic Wistar rats.

**Aim.** Evaluating the benefits of gembili and *Eubacterium rectale* on fasting blood sugar and ileal GLP1 gene expression of type 2 diabetic Wistar rats.

**Methods.** This study used quasi experimental with posttest only control group design. 25 male Wistar rats were grouped into 5 group: (1) healthy rat group, (2) Diabetic rat group, (3) Diabetic rat group received *Eubacterium rectale*  $10^8$ CFU/day, (4) diabetic rats group received 2,5g/day gembili, (5) Diabetic rats group receive combination gembili and *Eubacterium rectale*. Group 2 till 5 were induced with STZ 60 mg/kgBB and NA 120 mg/kgBB before receiving treatment. Gembili & *Eubacterium rectale* were given for 28 days. Fasting blood glucose level was measured using GOD-PAP method. GLP1 gene expression was analyzed using *Real-time* PCR (RT-PCR). Data were reported into means  $\pm$  standard deviation and analyzed with *one-way* ANOVA with significance level  $p < 0.05$ .

**Result.** Fasting blood glucose of group 3-5 were reduced significantly, compared to diabetic rats control group ( $p < 0.05$ ). GLP1 gene expression of group 3-5 increased, with group receiving only *Eubacterium rectale* had the highest level compared with other group. However, there was no significant difference between groups. ( $p > 0.05$ ).

**Conclusion.** Administration of *Eubacterium rectale*  $10^8$ CFU/day and gembili 2,5g/day could increase ileal GLP1 gene expression on type 2 diabetic rats.

Keywords: Gembili, *Eubacterium rectale*, type 2 diabetes, GLP1, Fasting blood glucose.