

ABSTRAK

Putri, Bridhita Ochtaviastu Kuncoro. 2015. **Perbedaan Kadar Interleukin-6 (IL-6) pada Organ Pankreas Tikus Putih (*Rattus norvegicus* Strain Wistar) Jantan Model Diabetes Mellitus Tipe II yang Diberi Susu Sapi Bubuk.** Tugas Akhir Program Studi Ilmu Gizi Fakultas Kedokteran Universitas Brawijaya. Pembimbing: (1) Fajar Ari Nugroho, S.Gz., M.Kes. (2) Olivia Anggraeny, S.Gz., M.Biomed.

Diabetes mellitus tipe 2 merupakan kelompok penyakit metabolik yang ditandai oleh hiperglikemia akibat kegagalan sekresi dan aksi insulin atau keduanya. Susu sapi bubuk mengandung vitamin D dan kalsium yang diduga mampu menurunkan kadar Interleukin-6 (IL-6) organ pankreas pada diabetes mellitus tipe 2. Tujuan dari penelitian ini untuk mengetahui perbedaan kadar IL-6 pada organ pankreas tikus wistar jantan model diabetes melitus tipe 2 yang diberi susu sapi bubuk. Penelitian eksperimental menggunakan *post test only control group design*. Sejumlah 30 ekor tikus wistar dibagi secara acak dalam 5 kelompok, yaitu kelompok K(-) adalah kelompok kontrol negatif dengan diet normal tanpa induksi *streptozotocin* (STZ). Kelompok K(+) adalah kelompok kontrol positif yang diberi diet tinggi lemak dan induksi STZ. Sedangkan kelompok P1, P2, dan P3 diberi diet tinggi lemak dan induksi STZ serta susu sapi bubuk dosis 0,9; 1,8; dan 2,7 gram per hari. Pada hari ke-91 dilakukan pengukuran kadar IL-6 di organ pankreas tikus dengan spektrofotometer. Hasil penelitian menunjukkan terdapat perbedaan bermakna antara kadar glukosa darah setelah induksi STZ dan gula darah akhir tikus ($p = 0,011$). Tetapi, tidak terdapat perbedaan yang bermakna pada kadar IL-6 antar kelompok (ANOVA, $p = 0,781$). Penurunan kadar IL-6 yang tidak signifikan dapat disebabkan efek pro dan anti-inflamasi IL-6 serta faktor seperti dosis dengan mempertimbangkan jalur dan frekuensi pemberian susu sapi bubuk, status defisiensi vitamin D di plasma, jangka waktu intervensi lebih lama, dan kandungan lemak jenuh serta n-6 PUFA dalam susu sapi bubuk, disarankan agar penelitian selanjutnya lebih memperhatikan faktor-faktor tersebut untuk membantu keberhasilan penelitian.

Kata kunci : susu sapi bubuk, Interleukin-6, *streptozotocin*, diet tinggi lemak, diabetes mellitus tipe 2.

ABSTRACT

Putri, Bridhita Ochtaviastu Kuncoro. 2015. **Comparison of Interleukin-6 (IL-6) Levels Of Pancreatic Organ In Cow's Milk Powder Fed White Male Rats (*Rattus norvegicus* Strain Wistar) with Type 2 Diabetes Mellitus.** Final Assignment, Nutrition Program, Faculty of Medicine, Brawijaya University. Supervisors: (1) Fajar Ari Nugroho, S.Gz., M.Kes. (2) Olivia Anggraeny, S.Gz., M.Biomed.

Type 2 diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion and action or both. Cow's milk powder contains of vitamin D and calcium were allegedly able to reduce Interleukin-6 (IL-6) levels of pancreatic organ in type 2 diabetes mellitus. This study was aimed to determine the difference of IL-6 levels of pancreatic organ in cow's milk powder fed white male rats with type 2 diabetes mellitus. Experimental study used post test only control group design. The total of 30 wistar rats were randomly divided into 5 groups, that was the K(-), the negative control group with normal diet and without induction of streptozotocin (STZ). Group K(+) was the positive control group with high fat diet and induction of STZ. While the group P1, P2, and P3 were given high diet and induction of STZ and cow's milk powder with various doses of 0,9; 1,8; and 2,7 grams per day. On the 91th day, IL-6 levels of pancreatic organ were measured with a spectrophotometer. The results showed that there was significant difference between after-induction of STZ and final blood glucose levels (paired t-test, $p = 0,011$). But, no difference in the levels of IL-6 between groups (ANOVA, $p = 0,781$). The decreased levels of IL-6 were not significant due to the pro and anti-inflammatory effects of IL-6 and other factors such as dose with consideration of route and frequency of feeding, deficiency status of vitamin D in plasma, longer time of intervention, and saturated fatty acids and n-6 PUFA contents of cow's milk powder. The results suggest that for further research should give more attention to these factors to help the success of the study.

Keywords : cow's milk powder, Interleukin-6, streptozotocin, high fat diet, type 2 diabetes mellitus