

Effect of Enteral Formula Based on Tempeh Flour and Jicama Flour on Albumin Serum in Hyperglycemic Wistar Rats

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ABSTRACT

Background : Hyperglycemia in patients without a history of diabetes has a significantly higher mortality risk than in patients with confirmed diabetes. Methods to overcome hyperglycemia are still being carried out, including modifying enteral formulas that can reduce blood glucose levels and increase albumin serum. Tempeh and jicama flour are choices because their protein sources can potentially increase albumin serum.

Objective : Determine the effect of giving enteral formulas based on tempeh and jicama flour on albumin levels in hyperglycemic Wistar rats.

Methods : An experimental study used 24 adult Wistar rats weighing 160-240 g fed by the standard AIN-93M diet. Rats were divided into 4 groups, specifically 2 control groups (K-,K+) and 2 treatment groups (P1,P2). Groups K(+),P1,P2 were induced by Streptozotocin 45 mg/kgBW and Nicotinamide 110 mg/kgBW. The dose of enteral formula made from tempeh and jicama flour was given to P1 as much as 4.32 g/200gBW and P2 as much as 7.56 g/200gBW for 42 days. Examine albumin serum using blood serum taken once from the plexus retro-orbital of Wistar rats as much as 10 ml, then be tested by the bromcresol green (BCG) method. Data analysis of differences in albumin levels after the intervention used the One Way Anova test with the Post Hoc test.

Results : The mean albumin levels of P1 and P2 were significantly different ($p<0.05$) against group K(+). The albumin level in the P2 group was higher at 4.44 ± 0.63 mg/dl than in the P1 group at 4.04 ± 0.06 mg/dl, but the P2 group was not significantly different ($p=0.064$) from the K(-) group.

Conclusion : Administration of enteral formula based on tempeh and jicama flour can increase serum albumin levels in hyperglycemic rats.

Keywords:: Hyperglycemia, Albumin, Enteral formula, Tempeh flour, Jicama flour

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Pengaruh Pemberian Formula Enteral Berbahan Dasar Tepung Tempe Dan Tepung Bengkuang Terhadap Serum Albumin Pada Tikus Wistar Hiperglikemia

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ABSTRAK

Latar Belakang : Hiperglikemia pada pasien tanpa riwayat diabetes memiliki risiko mortalitas lebih tinggi dibandingkan pasien dengan riwayat diabetes. Upaya mengatasi hiperglikemia masih terus dilakukan, diantaranya dengan memodifikasi formula enteral yang mampu menurunkan kadar glukosa darah dan meningkatkan serum albumin. Tepung tempe dan tepung bengkuang menjadi pilihan karena sumber proteinnya memiliki potensi meningkatkan serum albumin.

Tujuan : Mengetahui pengaruh pemberian formula enteral berbahan dasar tepung tempe dan tepung bengkuang terhadap kadar albumin pada tikus wistar hiperglikemia.

Metode : Penelitian eksperimental menggunakan 24 ekor tikus wistar dewasa dengan berat badan 160-240 g yang diberi pakan standar AIN-93M. Tikus dibagi 4 kelompok yaitu 2 kelompok kontrol (K-,K+) dan 2 kelompok perlakuan (P1,P2). Kelompok K(+),P1,P2 diinduksi *Streptozotocin* 45 mg/kgBB dan *Nicotinamide* 110 mg/kgBB. Dosis formula enteral berbahan tepung tempe dan tepung bengkuang diberikan pada P1 sebanyak 4,32 g/200gBB dan P2 sebanyak 7,56 g/200gBB selama 42 hari. Pemeriksaan serum albumin menggunakan serum darah yang diambil 1x dari *plexus retro orbitalis* tikus wistar sebanyak 10 ml, kemudian diuji dengan metode *bromcresol green* (BCG). Analisis data perbedaan kadar albumin setelah intervensi menggunakan uji *One Way Anova* dengan uji lanjut *Post Hoc*.

Hasil : Rerata kadar albumin P1 dan P2 berbeda signifikan ($p < 0,05$) terhadap kelompok K(+). Kadar albumin kelompok P2 lebih tinggi yaitu $4,44 \pm 0,63$ mg/dl daripada kelompok P1 sebesar $4,04 \pm 0,06$ mg/dl, namun kelompok P2 tidak berbeda signifikan ($p = 0,064$) dengan kelompok K(-).

Simpulan : Pemberian formula enteral berbahan dasar tepung tempe dan tepung bengkuang mampu meningkatkan kadar serum albumin pada tikus hiperglikemia.

Kata Kunci : Hiperglikemia, Albumin, Formula Enteral, Tempe, Bengkuang

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