

Pengaruh Suplementasi Vitamin D3 terhadap Kadar 25- hidroksi- vitamin D3 dalam Ginjal Model Tikus Prediabetes = The Effects of Vitamin D3 Supplementation on 25- hydroxy- vitamin D3 Levels in the Kidney of a Prediabetic Rat Model

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Abstrak

Latar belakang: Prevalensi prediabetes yang terus meningkat dapat menjadi masalah karena prediabetes dapat meningkatkan probabilitas terkena penyakit kardiovaskular. Diketahui bahwa vitamin D memiliki peran untuk mencegah progresivitas prediabetes menjadi diabetes walaupun berbagai hasil studi sebelumnya masih belum konsisten. Sampai saat ini, belum ada studi yang meneliti dosis suplementasi vitamin D yang dibutuhkan untuk memberikan kadar vitamin D yang cukup pada ginjal dalam mencegah perkembangan prediabetes. Kadar vitamin D biasanya diukur dalam bentuk lainnya yaitu 25(OH)D3 (25-hidroksi-vitamin D3) karena lebih mudah diukur. Oleh karena itu, pengaruh suplementasi vitamin D3 terhadap kadar 25(OH)D3 pada ginjal perlu diteliti lebih lanjut. Metode: Penelitian ini dilakukan dengan metode pra-klinis eksperimental yang menggunakan bahan biologis tersimpan berupa ginjal yang diperoleh dari model tikus prediabetes. Kelompok perlakuan terdiri dari 4 kelompok masing-masing 6 ekor yaitu: kelompok sehat, prediabetes tanpa perlakuan, prediabetes yang diberikan vitamin D3 100 IU dan prediabetes yang diberikan vitamin D3 1000 IU. Perlakuan diberikan selama 12 minggu kemudian diukur kadar 25(OH)D3 ginjal dengan metode ELISA. Perbedaan kadar 25(OH)D3 antar keempat kelompok diuji dengan metode statistik yang sesuai. Hasil: Kadar 25(OH)D3 di ginjal cenderung meningkat pada kelompok prediabetes. Suplementasi vitamin D3 100 IU/kgBB/hari maupun 1000 IU/kgBB/hari menurunkan kadar 25(OH)D3 pada ginjal dengan $p < 0,05$ setelah dianalisis dengan uji post hoc. Kesimpulan: Suplementasi vitamin D3 dosis 100 IU/kgBB/hari maupun 1000 IU/kgBB/hari sama-sama menyebabkan penurunan bermakna kadar 25(OH)D3 pada kelompok tikus model prediabetes dibandingkan kelompok model tikus prediabetes tanpa suplementasi.

.....Introduction: The increasing prevalence of prediabetes can be a problem because prediabetes can increase the probability of developing cardiovascular disease. It is known that vitamin D has a role in preventing the progression of prediabetes to diabetes, although the result of previous studies are still not consistent. Until now, there have been no studies examining the right dose of vitamin D supplementation that can provide adequate vitamin D levels in kidneys to prevent the development of prediabetes. Vitamin D levels are usually measured in another form, namely 25(OH)D3 (25-hydroxy-vitamin D3) because it is easier to measure. Therefore, effect of vitamin D3 supplementation on 25(OH)D3 levels in the kidneys of prediabetic needs to be investigated further. Method: This study is an experimental pre-clinical study that used stored biological material in the form of a kidney which were obtained from prediabetic rats. The treatment group consisted of 4 groups, each containing 6 rats, namely: a healthy group, prediabetes without treatment, prediabetes which were given 100 IU of vitamin D3 and prediabetes which were given 1000 IU of vitamin D3. The treatment was given for 12 weeks and then the kidney 25(OH)D3 levels were measured using ELISA method. The differences in levels of 25-hydroxy-vitamin D3 between the four groups were tested by the appropriate statistical method. Result: The levels of 25(OH)D3 in the kidneys tends to increase

in the prediabetes group. Treatment with vitamin D3 supplementation of 100 IU/kgBW/day and 1000 IU/kgBW/day both reduced the level of 25(OH)D3 in the kidneys with $p < 0.05$ after being analyzed by post hoc test. Conclusion: Vitamin D3 supplementation at a dose of 100 IU and 1000 IU of prediabetic rats model both caused a significant decrease in 25(OH)D3 levels in kidney compared to the prediabetics rat model without supplementation.