

Efek Pemberian Kefir-GM terhadap Keragaman dan Komposisi Bakteri

Digesta Tikus Sprague-Dawley Sindrom Metabolik

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INTISARI

Sindrom metabolik merupakan kelainan metabolisme tubuh yang dipicu oleh gaya hidup dan diet yang tidak sehat, saat ini prevalensi sindrom metabolik semakin meningkat. Kefir mengandung glukomannan porang diduga dapat digunakan sebagai agen terapi penderita sindrom metabolik. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan glukomannan terhadap keragaman dan komposisi bakteri Kefir-GM, mengetahui pengaruh pemberian Kefir-GM terhadap keragaman dan komposisi bakteri digesta, dan mengetahui berat badan dan asupan pakan tikus sindrom metabolik. Penelitian dilakukan dengan membagi tikus dalam 4 kelompok percobaan (1 kelompok dengan pakan standar, 3 kelompok tikus diinduksi sindrom metabolik dengan pakan tinggi lemak dan fruktosa). Tahap selanjutnya 4 kelompok tersebut diberi perlakuan yaitu, (1) kontrol, diet standar pada tikus normal, (2) diet standar pada tikus sindrom metabolik, (3) diet kefir pada tikus sindrom metabolik dan (4) diet kefir-GM pada tikus sindrom metabolik. Setelah 4 minggu perlakuan, sampel digesta diambil untuk dianalisa keragaman komunitas bakteri dengan metode *Ribosomal Intergenic Spacer Analysis* (RISA) dan *Terminal Restriction Fragment Length Polimorphism* (TRFLP) serta dibandingkan dengan keragaman bakteri pada kefir. Hasil penelitian menunjukkan bahwa penambahan glukomannan pada Kefir-GM meningkatkan Indeks Diversitas Shannon Wiener hingga 14,08% dan meningkatkan komposisi *Lactobacillus* 4,94%, *Bifidobacterium* 24%, *Lactococcus* 37,42%, *Pediococcus* 28,1%. Pemberian Kefir dan Kefir-GM pada tikus sindrom metabolik tidak berpengaruh secara nyata terhadap Indeks Diversitas Shannon Wiener pada $p < 0,05$, namun berpengaruh terhadap peningkatan jumlah *Lactobacillus* 14,61% dan *Bifidobacterium* 2,2%, serta penurunan jumlah *Clostridium* 38,15% dan *Bacteroides* 22,51%. Berat Badan dan Asupan pakan tidak berbeda nyata pada $p < 0,05$. Berdasarkan hasil penelitian, pemberian glukomannan pada kefir-GM berpengaruh terhadap keragaman dan meningkatkan jumlah probiotik. Pemberian Kefir dan Kefir-GM tidak mempengaruhi keragaman namun mampu memodifikasi komposisi bakteri digesta dengan meningkatkan jumlah *Lactobacillus* dan *Bifidobacterium* tetapi menekan *Clostridium* dan *Bacteroides*. Kefir dan Kefir-GM dapat mempertahankan berat badan dan asupan pakan tikus sindrom metabolik.

Kata kunci : sindrom metabolit, kefir, glukomannan, RISA, TRFLP

Effect of Kefir-GM on Diversity and Composition of Bacterial Communities of Digests in Sprague-Dawley Rats with Metabolic Syndrome

ABSTRACT

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The metabolic syndrome is a disorder of the body's metabolism, triggered by the lifestyle and unhealthy diet, the current prevalence of the metabolic syndrome is increasing. Kefir contains glucomannan porang could be used as a therapeutic agent for a metabolic syndrome. This study aimed to determine the effect of glucomannan to diversity and composition of bacteria Kefir-GM, to determine the effect of Kefir-GM on bacterial diversity and composition of digest, and to know the weight body and feed intake in rat metabolic syndrome. Research carried out by dividing the rats into four groups (one group with a standard feed, three groups of rats induced metabolic syndrome with high fat and fructose feed). The next stage of the 4 groups were given treatment, namely (1) control, a standard diet in normal rats (2) a standard diet in rats with metabolic syndrome (3) diet kefir in rats with metabolic syndrome, and (4) diet kefir-GM in rats with a metabolic syndrome. After 4 weeks of treatment, digestas were taken for analysis the diversity and composition of bacterial using *Intergenic Ribosomal Spacer Analysis* (RISA) and *Terminal Restriction Fragment Length Polymorphism* (TRFLP) method and compared with Kefir. The results showed that the addition of glucomannan in Kefir-GM increased Shannon-Wiener Diversity Index 14.08% and increased the composition of *Lactobacillus* 4.94%, *Bifidobacterium* 24%, 37,42% *Lactococcus*, *Pediococcus* 28.1%. Kefir and Kefir-GM in rats metabolic syndrome did not significantly affect the Shannon-Wiener Diversity Index at $p < 0.05$, but increased *Lactobacillus* 14.61% and *Bifidobacterium* 2.2%, and decreased *Clostridium* 38.15% and *Bacteroides* 22.51%. Body weight and feed intake did not significantly different at $p < 0.05$. Based on this research, glucomannan in kefir-GM affect the diversity and increasing the number of probiotics. Kefir and Kefir-GM did not affected diversity but it is able to modify composition bacteria on digesta by increasing *Lactobacillus* and *Bifidobacterium* and suppressing *Clostridium* and *Bacteroides*. Kefir and Kefir-GM can keep the weight body and feed intake in rats with metabolic syndrome.

Keywords: metabolic syndrome, kefir, glucomannan, RISA, TRFLP