Profil Asam Amino, Asam Lemak dan Kolesterol Minuman Fungsional Susu dengan Penambahan Isolat Protein Biji dan Kecambah Kara Pedang (C*anavalia ensiformis*)

Intisari

Susu sapi merupakan salah satu sumber protein hewani yang kaya akan nutrisi, namun mengandung asam lemak jenuh dan kolesterol yang tinggi dan terkait dengan resiko penyakit kardiovaskuler. Penambahan protein nabati seperti kacang kara pedang (*Canavalia ensiformis*) dalam bentuk isolat biji ataupun kecambah diharapkan dapat menurunkan kadar kolesterol dengan cara memperbaiki profil asam amino (menaikkan rasio Arginin : Lisin) karena dapat menjadi prekusor peningkatan NO dalam metabolism asam lemak ataupun melalui ketersediaan isoflavon dalam mengikat kolesterol. Tujuan penelitian ini adalah untuk membuat minuman fungsional susu sapi yang ditambah isolat protein biji dan kecambah kara pedang dengan profil asam amino, asam lemak dan kolesterol serta sifat fisik terbaik dan disukai. Rancangan penelitian berupa rancangan acak lengkap 7 perlakuan yaitu susu sapi tanpa penambahan, minuman fungsional susu yang ditambah isolat biji atau kecambah kara pedang 3%, 6%, 9%. Profil asam amino susu yang ditambah isolat biji atau kecambah kara pedang 3% (paling disukai vs kontrol) menunjukkan nilai yang lebih tinggi pada asam amino Glisin, Alanin dan Serin. Selain itu rasio arginine dan lisin dalam susu yang ditambah isolat biji atau kecambah kara pedang lebih tinggi dibandingkan tanpa penambahan dengan rasio sebesar berturut-turut 0,328; 0,323 dan 0,319, meskipun penambahan isolat biji atau kecambah kara pedang 3% ini belum dapat memenuhi standar rendah kolesterol BPOM. Kadar kolesterol dan profil asam lemak sebelum ataupun setelah pencernaan *in vitro* juga menunjukkan hasil terbaik pada susu isolat kecambah kara pedang 3%. Nilai ΔE warna susu sapi yang ditambah isolat biji ataupun kecambah kara pedang 3% adalah tidak berbeda nyata dengan susu sapi tanpa penambahan. Oleh karenanya, pada penelitian ini dapat disimpulkan susu sapi yang ditambah isolat protein biji atau kecambah kara pedang berpotensi sebagai minuman fungsional dalam pencegahan penyakit kardiovaskuler dengan rasa dan aroma yang masih disukai.

Keywords: susu, isolat, asam amino, kolesterol

Amino Acid, Fatty acid and Cholesterol Profile of Functional's Milk Drink with Additional Jack Bean's Seed or Sprouts Protein Isolate (*Canavalia ensiformis*)

Abstract

Fresh cow's milk is one of animal's protein sources that rich of nutrition but contain high saturated fat and cholesterol related with cardiovascular disease. Addition of plant-based protein like jack's bean (*Canavalia ensiformis*) in the form of protein isolat (seed or sprout) expected to improve the amino acid profile that related with cardiovascular disease by improving the amino acid profile (increasing the Arginine: Lysine ratio) because it can be a precursor to increasing nitrite oxide in fatty acid metabolism or improve the availability of isoflavones in cholesterol's binding. The aim of this research was to make a functional milk's drink added with protein isolate from the jack bean's seeds and sprouts with the best profiles of amino acids, fatty acids and cholesterol also physical properties. The experimental design was a completely randomized design with 7 treatments which is cow's milk without addition as control, a functional milk drink that was added with 3%, 6%, 9%. The amino acid profile with 3% jack bean's seed or sprouts isolate (most preferred vs control) showed higher values for the amino acids Glycine, Alanine and Serine. In addition, the ratio of arginine and lysine in milk added with the jack bean's seed or sprout isolate was higher than without addition with a ratio of 0.328, respectively; 0.323 and 0.319, although the addition of 3% jack bean seed or sprouts isolate could not meet low cholesterol standard of BPOM. Cholesterol levels and fatty acid profiles before or after in vitro digestion also showed the best results in 3% jack bean sprouts isolate. The ΔE value for the color of cow's milk added with 3% jack bean seed or sprout isolate was not significantly different from cow's milk without addition. Therefore, in this study, it can be concluded that cow's milk added with protein isolate from jack bean seeds or sprouts has the potential as a functional drink in the prevention of cardiovascular disease with a preferred taste and aroma.

Keywords: milk, isolate, amino acid, cholesterol.