

Intisari

Fortifikasi kalsium ke dalam produk pangan bertujuan untuk meningkatkan kandungan kalsium produk sehingga dapat dimanfaatkan sebagai pangan alternatif sumber kalsium untuk memenuhi asupan harian. Pengukuran laju dan jumlah kalsium dari makanan yang terserap oleh tubuh digunakan untuk menggambarkan bioavailabilitasnya. Penelitian ini bertujuan untuk mengetahui preferensi konsumen beserta bioavailabilitas kalsium dari *cookies* yang difortifikasi dengan tepung tulang lele dan sumber kalsium komersial. Fortifikasi sumber kalsium yang ditambahkan ke dalam *cookies* sebesar 240 mgCa/saji. Parameter uji yang dilakukan antara lain komposisi kimia sumber kalsium, komposisi kimia *cookies* tinggi kalsium, preferensi konsumen, bioavailabilitas kalsium dan magnesium. Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) dengan satu faktor yaitu fortifikasi produk (lima perlakuan dan tiga kali ulangan). Perlakuan berupa P1 (*cookies* tanpa fortifikasi), P2 (*cookies* yang difortifikasi tepung tulang ikan), P3 kalsium karbonat (CaCO_3), P4 (kalsium laktat ($\text{C}_6\text{H}_{10}\text{CaO}_6 \cdot 2\text{H}_2\text{O}$), P5 (trikalsium fosfat ($\text{Ca}_3(\text{PO}_4)_2$)) dan produk susu tinggi kalsium sebagai pembandingan bioavailabilitas. Hasil penelitian menunjukkan bahwa fortifikasi sumber kalsium ke dalam *cookies* tidak mempengaruhi kenampakan, tekstur, dan rasa ($p > 0,05$), namun berpengaruh terhadap aroma *cookies*, dan komposisi kimia meliputi kadar air, abu, protein, lemak dan karbohidrat ($p < 0,05$). Bioavailabilitas kalsium terbaik pada *cookies* secara berurutan antara lain perlakuan fortifikasi kalsium laktat 50,56%, kalsium karbonat 48,34%, susu tinggi kalsium 44,93%, tepung tulang ikan 35,95%, trikalsium fosfat 23,23%, dan *cookies* tanpa fortifikasi 20,28%.

Kata kunci: bioavailabilitas, *cookies*, kalsium komersial, preferensi konsumen, tepung tulang

Abstract

Calcium fortification in food products primarily aims to increase the calcium content of product that can be used as an alternative food of calcium source to fulfill daily intake. The calcium rate and amount measurement of absorbed food by body is used to describe the bioavailability. This research aims to find out the consumer preferences and bioavailability of calcium from fortified cookies with catfish bone meal and commercial calcium sources. The addition calcium source into the cookies was 240 mgCa/serving. Parameter tests that was conducted by the researcher were the chemical composition of calcium source, and high calcium cookies, the consumer preferences, and the bioavailability of calcium and magnesium. This research used Completely Randomized Design (CRD) with one factor that was fortification products (five treatments and three replications). The treatments were P1 (cookies without fortification), P2 (fortified cookies with fish bone meal), P3 calcium carbonate (CaCO_3), P4 (calcium lactate ($\text{C}_6\text{H}_{10}\text{CaO}_6 \cdot 2\text{H}_2\text{O}$)), P5 (tricalcium phosphate ($\text{Ca}_3(\text{PO}_4)_2$)) and milk in high calcium as a comparative bioavailability. The results showed that fortification of calcium source into cookies did not affect appearance, texture, and taste ($p > 0,05$), but effected on the cookies flavour, and the chemical compositions included moisture, ash, protein, fat and carbohydrates ($p < 0,05$). Bioavailability of calcium in cookies sequentially were cookies that fortified with calcium lactate 50,56%, calcium carbonate 48,34%, high calcium milk 44,93%, fish bone meal 35,95%, tricalcium phosphate 23,23%, and cookies without fortification 20,28%.

Key words: bioavailability, commercial calcium, consumer preferences, cookies, fish bone flour