

Penetapan kadar asam dokosaheksaenoat (DHA) dalam susu formula bayi dan anak secara kromatografi gas

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Abstrak

Asam dokosaheksaenoat (DHA) sangat penting bagi pertumbuhan sistem saraf dan penglihatan bayi karena merupakan asam lemak utama dalam fosfolipid otak dan retina. Namun, manfaat penambahan DHA dalam susu formula bayi masih kontroversial. Pemberian DHA yang berlebihan pada bayi perlu diwaspadai mengingat kemungkinan terjadinya efek samping yang ditimbulkannya. Penelitian ini bertujuan memperoleh metode analisis DHA secara kromatografi gas (KG) yang valid yang akan diterapkan untuk menetapkan kadar DHA dalam susu formula. Sebelum disuntikkan ke alat KG, lemak susu diekstraksi dengan kloroform-metanol (1:2) dan kemudian dimetilasi dalam metanol-toluen (4:1) dengan asetil klorida. Kondisi KG yang digunakan yaitu: suhu injektor 230°C, suhu detektor 250°C, suhu oven terprogram dengan suhu awal 130°C dinaikkan 2°C/menit sampai 230°C kemudian suhu ditahan selama 20 menit, laju alir helium 2,00 ml/menit, split 1:3. Metode ini telah memenuhi syarat uji presisi dan uji perolehan kembali. Hasil penetapan kadar DHA dari 5 sampel susu formula bayi dan anak yaitu $(27,49 \pm 0,62)$ mg/100 g, $(31,14 \pm 0,43)$ mg/100 g, $(11,83 \pm 0,38)$ mg/100 g, $(19,34 \pm 0,58)$ mg/100 g, dan $(45,87 \pm 0,42)$ mg/100 g.

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Docosahexaenoic acid (DHA) is important for development of infant's nervous and visual system because it is a major fatty acid in brain and retina phospholipids. However, the benefit of DHA addition in infant formula is still controversial. The over intake of DHA should be an awareness because of its side effect. The aim of this study was to get a valid analysis method of DHA using gas chromatography (GC) which will be used to determine the concentration of DHA in infant formula. Before being injected to GC, the milk fat was extracted with chloroform-methanol (1:2) and then methylated in methanol-toluene (4:1) with acetyl chloride. The GC conditions were: injector temperature was 230°C, detector temperature was 250°C, oven temperature was programmed to increase from 130°C to 230°C by 2°C/minute and held for 20 minutes, helium flow rate was 2.00 ml/minute, and split ratio was 1:3. This method had passed the precision and recovery evaluation. The results of DHA determination in 5 infant formula samples were (27.49 ± 0.62) mg/100 g, (31.14 ± 0.43) mg/100 g, (11.83 ± 0.38) mg/100 g, (19.34 ± 0.58) mg/100 g, and (45.87 ± 0.42) mg/100 g.