

## INTISARI

### PENGARUH KONSUMSI SUSU FORMULA YANG DISUPLEMENTASI GABUNGAN STRAIN *BIFIDOBACTERIA* (*B. LONGUM* BB536, *B. BREVE* M-16V, DAN *B. LONGUM* SUBSP. *INFANTIS* M-63) TERHADAP TUMBUH KEMBANG ANAK SEHAT USIA 1 – 3 TAHUN DIUKUR DENGAN *AGES AND STAGES* *QUESTIONNAIRES-THIRD EDITION* (ASQ-3)

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**Latar belakang:** Suplementasi probiotik *Bifidobacteria* diberikan dalam susu formula untuk menunjang tumbuh kembang anak, terutama pada periode emas yaitu usia 1-3 tahun. Parameter yang umum digunakan yaitu berat badan (BB), tinggi badan (TB) atau panjang badan (PB), dan lingkaran kepala (LK) untuk pertumbuhan anak serta *Ages and Stages Questionnaires-Third Edition* (ASQ-3) sebagai alat penapisan perkembangan anak.

**Tujuan:** Mengetahui pengaruh konsumsi susu formula yang disuplementasi gabungan strain *Bifidobacteria* (*B. longum* BB536, *B. breve* M-16V, dan *B. longum* subsp. *infantis* M-63) terhadap tumbuh kembang anak sehat usia 1–3 tahun diukur dengan *Ages and Stages Questionnaires-Third Edition* (ASQ-3).

**Metode:** Dalam uji acak terkendali dengan metode buta berganda yang dikontrol plasebo di Yogyakarta, 102 anak 1-3 tahun terdaftar dan dialokasikan secara acak untuk menerima susu probiotik (n=51) atau susu plasebo (n=51). Setiap kelompok dibagi kembali berdasarkan usia (12-24 bulan dan 25-36 bulan) untuk analisis BB, TB/PB, LK. Susu probiotik mengandung tambahan 3 strain *Bifidobacteria* masing-masing  $5 \times 10^7$  CFU/saji. Uji klinis dilakukan dengan periode *baseline* 14 hari dan intervensi selama 90 hari. Data diperoleh dari pengukuran BB, TB/PB, dan LK serta hasil kuisioner ASQ-3 pada awal dan akhir penelitian. Pengaruh intervensi dianalisis berdasarkan perbedaan kenaikan rata-rata dan interpretasi ASQ-3.

**Hasil:** Karakteristik kedua kelompok studi serupa pada awal penelitian dengan kepatuhan tinggi ( $\pm 89,5\%$ ). Hasil kenaikan BB, TB/PB, dan LK bermakna klinis pada usia 25-36 bulan. Dalam rentang usia tersebut, dibandingkan susu plasebo, konsumsi susu probiotik selama 3 bulan menghasilkan kenaikan yang lebih tinggi pada BB sebesar 0,12 kg ( $p=0,700$ ), pada TB sebesar 0,33 cm ( $p=0,451$ ), dan pada LK sebesar 0,20 cm ( $p=0,581$ ). Kenaikan skor ASQ-3 lebih tinggi pada kelompok probiotik, terutama pada domain motorik halus sebesar 12% ( $p=0,647$ ) yang hanya signifikan pada kelompok probiotik ( $p=0,022$ ) dan tidak signifikan pada kelompok plasebo ( $p=0,157$ ). Perbedaan skor domain ASQ-3 lainnya pada kedua kelompok tidak bermakna secara statistik, baik intragrup dan/atau antargrup.

**Kesimpulan:** Konsumsi susu formula yang disuplementasi gabungan strain *Bifidobacteria* (*B. longum* BB536, *B. breve* M-16V, dan *B. longum* subsp. *infantis* M-63) mampu mempertahankan dan/atau mendukung tumbuh kembang anak sehat usia 1-3 tahun. Pada kelompok probiotik, rata-rata kenaikan BB, TB/PB, dan LK serta skor domain ASQ-3 lebih tinggi, terutama pada aspek motorik halus. Seluruh hasil uji statistik tidak bernilai signifikan.

**Kata kunci:** susu formula, suplementasi, *Bifidobacteria*, tumbuh kembang, anak

## ABSTRACT

### THE IMPACT OF CONSUMING FORMULA MILK SUPPLEMENTED WITH A COMBINATION OF BIFIDOBACTERIA STRAINS (*B. LONGUM* BB536, *B. BREVE* M-16V, AND *B. LONGUM* SUBSP. *INFANTIS* M-63) ON THE GROWTH AND DEVELOPMENT OF HEALTHY CHILDREN AGED 1 TO 3 YEARS MEASURED USING THE AGES AND STAGES QUESTIONNAIRES-THIRD EDITION (ASQ-3)

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**Background:** Supplementation of Bifidobacteria probiotics is included in infant formula to support child growth and development, especially during the golden period of 1-3 years. Common parameters used are body weight (BW), height (HT) or length (LG), and head circumference (HC) for child growth, as well as the Ages and Stages Questionnaires-Third Edition (ASQ-3) as a tool for screening child development.

**Objective:** To determine the impact of consuming formula milk supplemented with a combination of Bifidobacteria strains (*B. longum* BB536, *B. breve* M-16V, and *B. longum* subsp. *infantis* M-63) on the growth and development of healthy children aged 1-3 years measured using the Ages and Stages Questionnaires-Third Edition (ASQ-3).

**Methods:** In a double-blind, placebo-controlled randomized controlled trial in Yogyakarta, 102 children aged 1-3 years were enrolled and randomly allocated to receive probiotic milk (n=51) or placebo milk (n=51). Each group was further divided by age (12-24 months and 25-36 months) for analysis of BW, HT/LG, and HC. Probiotic milk contained an additional 3 strains of Bifidobacteria, each  $5 \times 10^7$  CFU/serving. The clinical trial had a baseline period of 14 days and an intervention period of 90 days. Data was obtained from measurements of BW, HT/LG, and HC, as well as results of the ASQ-3 questionnaire at the beginning and end of the study. The effect of the intervention was analyzed based on the difference in mean increase and interpretation of ASQ-3.

**Results:** The characteristics of the two study groups were similar at baseline with high compliance ( $\pm 89.5\%$ ). The results of the increase in BW, HT/LG, and HC were only clinically significant at the age of 25-36 months. In this age range, compared to placebo milk, consumption of probiotic milk for 3 months resulted in a higher increase in BW by 0.12 kg ( $p=0.700$ ), in HT by 0.33 cm ( $p=0.451$ ), and in HC by 0.20 cm ( $p=0.581$ ). The increase in ASQ-3 scores was higher in the probiotic group, especially in the fine motor domain by 12% ( $p=0.647$ , which was only significant in the probiotic group ( $p=0.022$ ) and not significant in the placebo group ( $p=0.157$ ). Differences in other ASQ-3 domain scores between the two groups were not statistically significant, both intragroup and/or intergroup.

**Conclusion:** Consumption of formula milk supplemented with a combination of Bifidobacteria strains (*B. longum* BB536, *B. breve* M-16V, and *B. longum* subsp. *infantis* M-63) is able to maintain and/or support the growth and development of healthy children aged 1-3 years. Consumption of probiotics increased BW, HT/LG, HC and ASQ-3 domain scores, especially in the fine motor aspect. All statistical results were not significant.

**Key words:** formula milk, supplementation, Bifidobacteria, growth and development, children