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**Fortification of some date products with microencapsulated probiotic bacteria**

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Recently, scientists interested in functional food, especially probiotic food which has many health benefits. Probiotic microorganisms expose to many risks during their presence in food products and after passing through gastrointestinal tract as well. Therefore, the a main goal of this study to try to keep probiotic bacteria alive in date products during storage period and after eating. Free and calcium alginate microencapsulated *Bifidobacterium lactis* Bb-12 were mixed with date paste and date syrup (Dibs) and exposed to simulated gastrointestinal conditions, to observe its effects on viability of on *B. lactis*. The results showed that date paste and Dibs have a protective effect to the free bacteria and increased protection of encapsulated bacteria when compared to free bacteria without mixing with a date paste and Dibs. The viable counts of probiotic bacteria were numerated in date paste and Dibs during storage. At the end of the seventh week from storage period, the numbers of free *B. lactis* were reduced in both date paste and Dibs for up to 10<sup>6</sup> cfu/g, while the numbers of encapsulated bacteria remained at 10<sup>7</sup> cfu/g. The microencapsulated bacteria retained the numbers up to 10<sup>6</sup> cfu/g until week ten. The changes in pH values, production of organic acid and color of date paste and Dibs were monitored during storage period. The sensory analysis of date products fortified with probiotic bacteria were evaluated. The results showed that the addition of both free and encapsulated probiotic bacteria did not show any significant effect on the sensory properties of date products. This study has shown the microencapsulation protected *Bifidobacterium lactis* Bb-12 from the high sugars concentration of date products and simulated gastrointestinal conditions. Such of this product will provide an alternative probiotic food choice for consumers and could be particularly appealing to children.

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**Analysis of dose of fast food consumption as risk factor of childhood obesity in Yogyakarta, Indonesia**Esti Nurwanti<sup>1</sup>, Hamam Hadi<sup>1</sup> and Madarina Julia<sup>2</sup><sup>1</sup>Alma Ata Center for Healthy Life and Food (ACHEAF), Indonesia<sup>2</sup>Gadjah Mada University, Indonesia

**Background:** The childhood obesity has been an epidemic in both developed and developing countries including Indonesia. Whether exposure to fast food consumption is associated with the increased obesity prevalence in Indonesian school children remains unclear.

**Objective:** To examine dose energy, saturated fat, and sodium from fast food as risk factors of obesity in Indonesian elementary school children.

**Design:** A case-control study of 244 obese and 244 non obese children was conducted in Yogyakarta municipality in 2012. Cases were elementary school children with body mass index/age > 95<sup>th</sup> percentile identified in previous survey. Controls were children from the same class and seating at the right side nearest to the cases. Weight and standing height were noted by trained nutritionists. Data on fast food consumption were obtained by semi quantitative food frequency questionnaire. Body mass index of the study subjects were computed using WHO Anthro2005 software. Statistical analysis was done using STATA 11<sup>th</sup> edition software.

**Result:** Elementary school children who ate energy from fast food >1500 Kcal/day (OR=3.24) and saturated fat from fast food > 30 g/day (OR=6.32) more likely to be obese. Sodium from fast food intake > 1500 mg/day also have significant result to increase obesity risk in children (OR=2.08), but the result is not consistent.

**Conclusion:** Energy, saturated fat, and sodium from fast food were proven to be significantly associated with the increased risk of obesity in Indonesian elementary school children.

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