

Thesis Lactose Maldigestion and Intolerance after Milk
Consumption in Children and Adolescents.

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Abstract

Previous studies using lactose tolerance test reported that most Asian people, including Thais, are lactose intolerants, suffering from gastrointestinal symptoms when drinking milk. The symptoms involved are abdominal pain, bloating, flatulence and diarrhea. In lactose maldigesters undigested carbohydrates are metabolized by colonic bacteria, resulted in acid and gases formation. The major part of the gases is expelled as flatus but a substantial part is absorbed into the blood and excreted through the lungs. Using lactose tolerance test, previous studies reported 100% lactose malabsorbers in Thai children. By hydrogen breath test, about 80% of Thai adults were lactose maldigesters. This experiment was, therefore, aimed to study lactose maldigestion and

intolerance in kindergarten children and adolescents after milk consumption at mid morning break by hydrogen breath test.

One-hundred and one children, aged 5-6 years, randomly sampled from 5 schools of the Office of the National Primary Education Commission, namely Wat Parinayok kindergarten school, Pra Tumnak Suan Kularb school, Sam Sen kindergarten school, Tung Mahamek school and Bang Kae Primary school, participated in this study. Another group of subjects were 42 adolescents-lactose maldigesters (identified by another study) from Grade 10, Mahidolvitayanusorn school. The results showed that 15% of kindergarten subjects who had breakfast prior to drinking milk at mid morning break were lactose maldigesters and there were no gastrointestinal symptoms experienced among them. When a snack was given with milk at mid-morning break, the number of lactose maldigesters decreased insignificantly from 15% to 12%. However, considering the earlier 15 individual lactose maldigesters, who were identified when milk was given without solid food, it was found that the solid food had favorable effects on : (1) decreasing number of lactose maldigesters (87%), (2) delaying in postprandial hydrogen rising time for 1 h, (3) reducing breath hydrogen production (55%) as shown by reducing in individuals' absolute height of magnitude peak of hydrogen and cumulative hydrogen excretion (statistically significant at $p \leq 0.05$). In adolescents with breakfast, compared to fasting, it was confirmed that breakfast had favorable effect on reducing breath hydrogen production - decreasing number of lactose maldigesters by about 50% - after drinking milk at mid-morning break, and none of them suffered from gastrointestinal symptoms.