

Low Intake of Aspartame Induced Weight Gain and Damage of Brain and Liver Cells in Weanling Syrian Hamsters

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Abstract : This paper aims to investigate the health effects of aspartame on weanling male hamsters. 20 Golden Syrian hamsters drank only water (control) or water with 6, 11, and 18 mg aspartame/kg of body weight per day for 42 days. Food intake, weight gain, glucose blood level, and lipid profile were determined at the end of the experiment. The animals were sacrificed and histopathological examination of organs (liver, brain and heart) was done. Results revealed that animals in Asp.groups consumed significantly larger amount of food than the control (13.4 ± 5.9 , 8.6 ± 2.5 and 8.8 ± 3.0 vs 4.2 ± 2.5 g/day, in succession). Hamsters in the control group showed higher total cholesterol and HDL levels than hamsters in aspartame 6, 11, 18 groups (160 ± 19 vs 101 ± 13 , 130 ± 22 , 141 ± 15 mg/dl & 144 ± 9 vs 120 ± 12 , 118 ± 13 , 99 ± 17 respectively ($P<0.05$)). The control group showed a glucose concentration below those of aspartame groups, indicating no effect of aspartame on glucose blood level. While, there were no significant differences in the triglycerides and LDL levels between control group and Asp.groups. Histopathological changes were observed, especially in brain and liver cells. Aspartame increases appetite and weight gain of young hamsters. Therefore, FDA should reconsider the acceptable daily intake (ADI) of aspartame for children.

Keywords : aspartame, brain, food intake, hamsters

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