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The effect of soymilk supplementation on nutritional status of serum Fe, Cu and Zn in adult women

Myung-Hee Kim*, Yun-Jung Bae, Mi-Hyun Kim¹⁾, Jin-Mi Chun²⁾, Ho-Kyoung Kim²⁾,
Chung-Ja Sung

Department of Food and Nutrition, Sookmyung Women's University, Korea,

Department of food and nutrition, Samcheok National University, Korea¹⁾,

Department of Quality Control of Herbal Medicine, Korea Institute of Oriental Medicine, Korea²⁾

A soybean is an excellent source of nutrition supply since it contains not only functional ingredients which helps activate physiology, but also abundant minerals and dietary fiber. However, a soybean also contains such agents as trypsin inhibitor, saponin, etc. which obstruct nutrient intakes and as a result, lessen its positive effect on activate physiology than expected. Recently, media effects have driven young adult women to struggle to lose weight imprudently in pursuit of slim body shape and as a result have a negative effect on micronineral nutrition such as Fe. Under the circumstances, we felt a strong need for a research on what effects the supplementation of soybean-processed products have on the mineral state in human body. Therefore, this research focuses on soymilk which is easily bought and consumed in day-to-day life, and is very digestible since the heat treatment during its production process deactivates the obstructive agents. In this research adult women were made to intake soymilk in their daily lives and we studied the effect of soymilk supplementation on their nutritional state of Fe, Cu and Zn that are major minerals in human body. With this research, we aims to provide basic materials that promote day-to-day consumption of soymilk by adult women in the country in the age range when pregnancy is possible. In this research 33 female students were selected and ten weeks were provided with 400 ml of soymilk a day, and anthropometric measurement and 24-hr recall method and also analysed the subjects' nutritional state of Fe, Cu and Zn from the blood. The average age of the subjects is 22.3 years old, the height and weight is 160.8 cm 48.9 kg respectively and BMI and WHR 18.9 kg/m² and 0.79 respectively. The subjects' blood pressure was normal with the systolic blood pressure registering 108.1 mmHg and the diastolic blood pressure 66.0 mmHg. After comparing the results of the nutrients intakes taken 3 days before and after the soymilk intakes, the results showed that vegetable protein intakes significantly increased to 44.8 g after soymilk intakes from 35.9 g(before soymilk intake)(p<0.001), but showed no significantly change in other nutrients. After soymilk intakes, serum Fe content significantly increased around 20% to 211.1 µg/dl from 175.3 µg/dl, and serum Zn content increased 5.3% to 77.4 µg/dl from 73.5 µg/dl(p<0.01, p<0.05) However serum Cu content meaningfully decreased around 8.3% to 66.9µg/dl from 72.8µg/dl(p<0.001) while there was no significantly change in the concentration of serum calcium, ceruloplasmin, ALP. To sum up, although soymilk supplementation decreased serum Cu content in young adult women's body to which mineral nutritional state is critical, it has been proved to increase serum Fe and Zn. Therefore, we hope that the results can be used as basic materials to support the promotion of soymilk(a soybean processed product) intake that is nutritionally excellent for modern young adult women trying to lose weight imprudently in pursuit of slim body shape.