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EFFECTS OF LONG-TERM SUPPLEMENTATION OF KOREAN CABBAGE KIMCHI ON THE STATUS OF STOMACHAL MEMBRANE AND MINERAL METABOLISM IN FISHER 344 MALE RATS

Sung Hyeon Lee, Ji Yeon Kim, Young Sook Hwangbo, and Hong Ju Park

National Rural Living Science Institute, Rural Development Administration, Suwon, Korea

Kimchi is a traditional fermented vegetable food in Korea. There are about 187 varieties of Kimchi, depending on the ingredients and processing methods used, which are different in microbiological, nutritional, and biochemical characteristics. Much attention for Kimchi has been focused on health and life extension. Kimchi is fermented by the microorganisms which are originally present in the raw vegetable substances. Results from many *in vitro* studies on the antimutagenic and anticarcinogenic properties of Kimchi extracts have been reported. Carotenoids, ascorbic acid, dietary fiber, and flavonoids in yellow green vegetables used as the major ingredients of Kimchi showed antimutagenic and anticancer activities. And Kimchi is a nutritionally important source of vitamins, minerals, dietary fiber, and other nutrients. However, it has been suspected that the saltiness and hot taste of Kimchi may induce gastric ulcer and reduction of some minerals absorption ratios, and there are few results of the effects of Kimchi supplement on its safety to the stomach and on mineral metabolism, though Kimchi has typical biochemical and health-related functions as mentioned above. Thus, we have to evaluate the effects of long-term supplementation of Korean cabbage Kimchi which is highly consumed in our country, on the status of stomachal membrane and mineral metabolism *in vivo* experiment.

Effects of Kimchi on its safety to the stomach and on mineral metabolism were studied in this experiment using 30 Fisher 344 male rats fed 3 kinds of diets for 36 weeks. Two kinds of diets except control, included different types of freeze-dried Kimchi made with 2 levels of content of salted anchovy juice (KA, KB ; 2.6%, 7.0 % of the Kimchi, respectively) at 10% of the diets. Water intake

and urine volume were significantly higher in KA and KB groups than the control group though there was no significant difference in food intake among groups. The weights of total body and liver were significantly lower in KB group, while the kidney weight was significantly higher in KB group than the control group, and there was no significant difference in the weights of spleen and heart among groups. The experimental diets supplemented with two kinds of Kimchi had no side effects like erosion, ulcer and atypical changes on stomachal membrane. The absorption rates of Ca and Mg in KB group were significantly lower than those of the control group at 15^{th} week of feeding experimental diets, but Kimchi supplementation did not affect on the absorption rates of minerals such as Ca and Mg at 36^{th} week of feeding diets. The length and the breaking strength of femur in KB group were significantly lower than those of the control group. These results suggest that long-term supplementation of salty Korean cabbage Kimchi(KB) may affect negatively on the bone health without inducing harmful effect on stomachal membrane.