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Development of Tofu-Hamburger Steak using Skim Milk for the Elderly

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The aging rate in Japan already exceeded 14% in 1994, and by 2017, a full-fledged aging rate of 26% is anticipated. The elderly are prone to protein energy malnutrition, and have problems of the deficiency of protein and energy, as well as the insufficiency of various nutrients, such as vitamins and minerals. At present, for the improvement of the elderly's quality of life and in the view of nutrition, the development of easy-to-eat foods is demanded. Skim milk is useful material since it is rich in protein and calcium and its concentration can be easily controlled because of its powder form. In this study, to achieve the object to develop foods for the elderly also having health preservation functions, the physical property and palatability of tofu hamburger in which milk was substituted by skim milk were examined. Three types of tofu hamburger were prepared by a mixture of tofu and minced chicken. Tofu is bean curd produced by coagulating soybean milk. Among the materials, (A)milk was not substituted as control; (B)milk was substituted by a 10% solution of skim milk; and (C)milk was substituted by a 20%. The texture properties and Hunter's values (L , a and b) were measured. Sensory evaluation was carried out using Ranking Method (ISO 8587:1988). The panel of youth students (male and female of 19 to 24) and the elderly (healthy men and women of 65 to 78) were constituted 50, respectively. It was suggested that the samples were effective to improve the low calcium intake and the hardness were sufficiently adaptable for the elderly. The calcium content of the samples was 6 times, compared with those of products using a common recipe. Each B and C had a slightly different color tone from A. As a result of the sensory test, although samples A and B were evaluated to be easily swallowed by the youth, no significant difference was found in the elderly. The elderly were estimated to be difficult to recognize the difference texture of the samples. It was considered to be caused by resulted from lowered chewing and masticatory function in the mouth of the elderly. Therefore, in the development of foods for the elderly, it was clarified that the youth was required for evaluating texture between samples and the elderly was required for evaluating palatability.