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Nutritional evaluation of beef-bone broth products: focus on calcium, phosphorus, and magnesium content*

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Abstract

Beef-bone broth is a soup made by boiling beef bones for long periods, the eluate of which is then consumed; this broth is generally recognized as a healthy food and a source of calcium. Due to the time-consuming cooking process, the consumption of ready-to-heat beef-bone broth is increasing over that of homemade beef-bone broth. This study aimed to evaluate the calcium phosphorus, and magnesium contents of commercially available beef-bone broth products. In this study, 36 types of beef-bone broth sold in online and offline markets in South Korea from May to November 2022 were purchased. Energy and nutrient content information was collected from the nutrition label on the packaging, and the contents of calcium (Ca), phosphorus (P) and magnesium (Mg) were analyzed via inductively coupled plasma – mass spectrometry (ICP-MS). The price and nutritional content of the products were evaluated based on the reference serving size of 250 g of soup. The average calorie content was 42.6 kcal (1.64% EER of Korean men aged 19-29), with a minimum of 12.5 kcal and a maximum of 98 kcal. The average protein content was 4.6 g (7.04% RI of Korean men aged 19-29), and the average fat content was 2.4 g. The average Ca content was 7.6 mg (0.96% RI of Korean men aged 19-29), with a minimum of 2.2 mg and a maximum of 12.9 mg. The Mg content averaged 2.6 mg, and the P content was high at 299.0 mg. The results suggest that commercially available ready-to-heat beef-bone broth is low in energy but relatively high in protein. While beef-bone broth is low in Ca and Mg, its P content is high. Thus, the nutritional characteristics of beef-bone broth products should be taken into consideration, and product use should be guided by the purpose and context of consumption.

Keywords: beef-bone broth product, calcium, phosphorus, magnesium

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