

Effects of fish bone hydrolysates on calcium absorption in the ovariectomized rat

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ABSTRACT

In the previous studies, we had obtained soluble calcium from hoki (*Johnius belengerii*) bone and investigated its bioavailability *in vitro* correlated with calcium absorbability in intestine. Recently, hydrolysates were also prepared from fish bone protein and separated into various ranges of molecular weight (>10 kDa, 10-5 kDa, 5-1 kDa and <1 kDa) using ultrafiltration membrane in order to develop the calcium chelates as effective calcium absorption accelerator like casein phosphopeptide. The hydrolysates with the range of molecular weight, 5-1 kDa had a potent bioavailability *in vitro* (antiprecipitation activity in phosphate solution), and the active hydrolysate and fish bone calcium were designated for experimental diets *in vivo*. Six-week-old female Sprague-Dawley rats were ovariectomized and fed experimental diets containing a low-calcium diet (0.5% Ca, 0.4% P) for 6 weeks in order to investigate effects on calcium and bone metabolism. The final calcium concentration in serum was significantly higher than that of basal (fed CaCO₃ as calcium source), and the concentration in feces was lower than that of basal. Moreover, bone density in femur is significantly higher than that of basal. These results demonstrated that fish bone hydrolysates and calcium definitely involved in calcium metabolism *in vivo*.