

## Effect of Phytate on Endogenous Secretion of $^{65}\text{Zn}$ in Zn-depleted Rats

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The purpose of the current research was to study the effect of phytate and Ca level on the endogenously secreted zinc. Sprague-Dawley rats (48) were fed a casein-based diet with added Na phytate containing either high (1.6 %) or low (0.8 %) Ca for 4 weeks to reduce the body zinc pool. After the depletion period,  $^{65}\text{Zn}$  was given intraperitoneal injection to label the endogenous pool. Phytate and non-phytate were tested for each high and low Ca level. Feces were collected for the following 3 wks of collection period (2 wks of the initial collection and 1 wk after crossover collection). The ratios of excreted  $^{65}\text{Zn}$  radioactivity (phytate/non-phytate) were determined as a measure of the phytate effect on endogenous zinc.

Mean fecal  $^{65}\text{Zn}$  radioactivity was higher in the phytate group than in the non-phytate group during the initial collection period as well as during the crossover collection period at the low Ca diets ( $p < 0.0001$ ). For the high Ca diet, the fecal  $^{65}\text{Zn}$  radioactivity was higher for the phytate group than the non-phytate group during the initial collection period ( $p < 0.0001$ ) but was not different after dietary crossover collection period ( $p > 0.005$ ). Ratios of phytate/non-phytate ranged from 0.66 - 1.77 for low Ca diet and 0.64 - 1.99 for the high Ca diet. Since ratios above 1 represent a phytate effect on complexing endogenous zinc, this study showed phytate effect at both dietary Ca levels. At the elevated dietary Ca level, the phytate effect was synergized by dietary Ca ( $p < 0.005$ ).

**Key Words:** phytate, endogenous zinc, calcium,  $^{65}\text{Zn}$  radioactivity.