

AOAC¹

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HNO₃ / H₂SO₄
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¹ Association of Official Analytical Chemist

$\bar{x} \pm s$ $\bar{x} \pm s$ $\bar{x} \pm s$
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$\bar{x} \pm s$ $\bar{x} \pm s$ $\bar{x} \pm s$:
 $\bar{x} \pm s$ ()

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ANOVA

Post Hoc Tukey

($p < /$)

($p < /$)

$$\left(\frac{\bar{x} - \bar{y}}{s} \right) \quad (n=) \quad \frac{\text{(mg)}}{\text{(mg)}} =$$

%

	()	()	()	
$\bar{x} \pm s$ (a) (/ /)	$\bar{x} \pm s$ (a) (/ /)	$\bar{x} \pm s$ (a) (/ /)	$\bar{x} \pm s$ (a) (/ /)	
$\bar{x} \pm s$ (a) (/ /)	$\bar{x} \pm s$ (a,b) (/ /)	$\bar{x} \pm s$ (a,b) (/ /)	$\bar{x} \pm s$ (a,b) (/ /)	
$\bar{x} \pm s$ (a,b) (/ /)	$\bar{x} \pm s$ (c) (/ /)	$\bar{x} \pm s$ (a,b) (/ /)	$\bar{x} \pm s$ (b) (/ /)	
$\bar{x} \pm s$ (b,c) (/ /)	$\bar{x} \pm s$ (c) (/ /)	$\bar{x} \pm s$ (b) (/ /)	$\bar{x} \pm s$ (c) (/ /)	
$\bar{x} \pm s$ (c) (/ /)	$\bar{x} \pm s$ (c) (/ /)	$\bar{x} \pm s$ (b) (/ /)	$\bar{x} \pm s$ (c) (/ /)	
$\bar{x} \pm s$ (c) (/ /)	$\bar{x} \pm s$ (c) (/ /)	$\bar{x} \pm s$ (b) (/ /)	$\bar{x} \pm s$ (c) (/ /)	
$\bar{x} \pm s$ (c) (/ /)	$\bar{x} \pm s$ (b,c) (/ /)	$\bar{x} \pm s$ (b) (/ /)	$\bar{x} \pm s$ (c) (/ /)	
$p < /$	$p < /$	$p < /$	$p < /$	ANOVA

(n=)

($p < /$)

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$l \pm l$ (/ /)	$l \pm l$ (/ /)	$l \pm l$ (/ /)	$l \pm l$ (/ /)	(n=)
$l \pm l$ (/ /)	$l \pm l$ (/ /)	$l \pm l$ (/ /)	$l \pm l$ (/ /)	(n=)
$p < l$	NS	NS	$p < l$	T Test

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¹ Oberleas

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(IZiNCG)

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¹ Reinhold
² Mameesh

References:

1. Harland BF, Oberleas D. Phytate in foods. *Wld Rev Nutr Diet*, 1987, 52: 235-259.
2. Sandberg AS. Bioavailability of minerals in legumes. *Br J Nut*, 2002, 88(3s): S281-S285.
3. Lonnerdal B. Dietary factors influencing zinc absorption. *J Nutr*, 2000, 130: 1378s-1383s.
4. Hallberg L, Brune M, Rossander L. Iron absorption in man: ascorbic acid and dose-dependent inhibition by phytate. *Am J Clin Nutr*, 1989, 49: 140-144.
5. Weaver CM, Heaney RP, Martin BR, Fitzsimmons ML. Human calcium absorption from whole - wheat products. *J Nutr*, 1991, 121: 1769-1775.
6. Davidsson L, Almgren A, Jullerat MA, Hurrell RF. Manganese absorption in humans: The effect of phytic acid and ascorbic acid in soy formula. *Am J Clin Nutr*, 1995, 62: 984-987.
7. Prasad AS. Zinc deficiency. *Br Med J*, 2003, 326: 409-410.
8. Mahmoodi MR, Kimiagar SM. Prevalence of zinc deficiency in junior high school students of Tehran City. *Biol Trace Elem Res*, 2001, 81(2):93-103.
9. Ahrari M, Kimiagar SM. Food intake and Body Mass Index in the privately institutionalized elderly in Tehran. *Int J Vitam Nutr Res*, 1997, 67(1):41-46.
10. In vitro availability of zinc from infant foods with increasing phytic acid contents. *Br J Nutr*, 2001, 86: 241-247.
11. Anderson JJB. Minerals. In: Mahan LK, Escott-stump S. *Krause's Food, Nutrition & Diet Therapy*, 11th Ed, W.B. Saunders Co, 2004: 120-163.
12. Reinhold JG. High phytate content of rural Iranian bread: a possible cause of human zinc deficiency. *Am J Clin Nutr*, 1971, 24: 1204-6.
13. Morris ER, Ellis R. Usefulness of the dietary phytic acid / zinc molar ratio as an index of zinc bioavailability to rats and humans. *Biological Trace Element research*, 1989, 19: 107-117.
14. Lo GS, Settle SL, Steinke FH, Hopkins DT. Effect OF phytate. zinc molar ratio and isolated soybean protein on zinc bioavailability. *J Nutr*, 1981, 111:2223-35.
15. Navert B, Sandstrom B. Reduction of the phytate content of bran by leavening in bread and its effect on zinc absorption in man. *Br J Nutr*, 1985, 53: 47-53.
16. Bosscher D, Lu Z, Janssens G, Van Caillie - Bertrand M, Robberecht H, De Rycke H, et al. Absorption of zinc from soy protein meals in humans. *J Nutr*, 1987, 117: 321-327.
17. Sandstrom B, Kivisto B, Cederblad A. Zinc absorption in humans from meals based on rye, barley, oatmeal, triticale, and whole wheat. *J Nutr*, 1987, 117: 1898-1902.
18. Fitzgerald SL, Gibson RS, Quan de Serrano J, Portocarrero L, Vasquez A, De Zepeda E, et al. Trace element intakes and dietary phytate/zn and Ca²⁺ phytate/zn millimolar ratios of periurban Guatemalan women during the third trimester of pregnancy. *Am J Clin Nutr*, 1993, 57(2): 195-201.
19. Brown KH, Wuehler SE, Peerson JM. The importance of zinc in human nutrition and estimation of the global prevalence of zinc deficiency. *Food & Nutr Bull* 2001, 22: 113-125.
20. Gibson RS, Sazawal S, Peerson JM. Design and quality control issues related to dietary assessment, randomized clinical trials and meta - analysis of field - based studies in developing countries. *J Nutr*, 2003, 133: 1569s-73s.
21. International Zinc Nutrition Consultative Group (IZiNCG). Assessment of the risk of zinc deficiency in populations and options for its control. Hotz C and Brown KH, eds. *Food & Nutr Bull* 2004, 25(1s): S91-S202.
22. World Health Organization. Trace element in human nutrition and health. Geneva, 1996: 30-35, 90-91.
23. Cunniff P. Official methods of analysis of AOAC international. 16th Ed. Virginia, USA, 1995, Chaps: 9(P: 31), 32(PP: 2-4, 34, 42-43).
24. Oberleas D, Harland BF. Phytate content of foods: effect of dietary zinc bioavailability. *J Am diet Ass*, 79, 1981: 433-36.
25. Committee on Medical Aspects of food policy: Nutritional aspects of bread and flour. Report of the panel on bread, flour and other cereal products. Department of health and social security. London, first ed. 1981, 8-15.

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33. Mameesh MS, Tomar M. Phytate content of some popular kuwaiti foods. *Cereal Chem*, 1993, 70(5): 502-503.

34. Fairbanks VF. Iron in medicine and nutrition. In: Shils ME, Olson JA, Shike M, Ross AC, editors. *Modern nutrition in health and disease*, 9th Ed. Lippincott Williams&Wilkins, USA, 193-240, 1999.