

靜宜大學 103 學年度碩士班招生考試試題

學系：食品營養學系營養與保健組 科目：營養學

請註明題號回答於答案卷。

一、解釋名詞：(20%)

1. Net protein utilization
2. Nutrigenomics
3. Tolerable upper intake levels
4. Tryptophan loading test

二、問答題：

1. Zinc 為一種重要之微量營養素，請回答下列問題：

- (1) 簡述 Zinc 之生理/生化功能(10%)。
- (2) 說明影響 Zinc 在體內吸收之可能因子(10%)。
- (3) Zinc supplement 已應用於臨床醫療，請先閱讀下方文獻摘要後以文字說明此篇文獻之實驗目的、實驗採用之方法、實驗主要之結果與結論(字數至多 300 字)(10%)。

Abstract

The water-soluble zinc salts gluconate, sulfate, and acetate are commonly used as supplements in tablet or syrup form to prevent zinc deficiency and to treat diarrhea in children in combination with oral rehydration. Zinc citrate is an alternative compound with high zinc content, slightly soluble in water, which has better sensory properties in syrups but no absorption data in humans. We used the double-isotope tracer method with ^{67}Zn and ^{70}Zn to measure zinc absorption from zinc citrate given as supplements containing 10 mg of zinc to 15 healthy adults without food and compared absorption with that from zinc gluconate and zinc oxide (insoluble in water) using a randomized, double-masked, 3-way crossover design. Median (IQR) fractional absorption of zinc from zinc citrate was 61.3% (56.6–71.0) and was not different from that from zinc gluconate with 60.9% (50.6–71.7). Absorption from zinc oxide at 49.9% (40.9–57.7) was significantly lower than from both other supplements ($P < 0.01$). Three participants had little or no absorption from zinc oxide. We conclude that zinc citrate, given as a supplement without food, is as well absorbed by healthy adults as zinc gluconate and may thus be a useful alternative for preventing zinc deficiency and treating diarrhea. The more insoluble zinc oxide is less well absorbed when given as a supplement without food and may be minimally absorbed by some individuals. This trial was registered at clinicaltrials.gov as NCT01576627.

(source: Wegmüller R et al. Zinc absorption by young adults from supplemental zinc citrate is comparable with that from zinc gluconate and higher than from zinc oxide. *J. Nutr.* 2014;144:132-136)

2. 請寫出成人 Essential fatty acid 的中英文名稱，並比較魚油、橄欖油、沙拉油、黑芝麻油的營養價值。(30%)
3. 請說明 2012 新版國民飲食指標和每日飲食指南的內容和意義，並比較與舊版之差異。(20%)