

記錄編號	6569
狀態	NC094FJU00255022
助教查核	
索書號	
學校名稱	輔仁大學
系所名稱	食品營養學系
舊系所名稱	
學號	492445161
研究生(中)	郭曉惠
研究生(英)	Hsiao Hui Kuo
論文名稱(中)	國人捐贈乳中一般成份及礦物質含量之建立與研究

論文名稱(英)	Macronutrients and mineral contents of human milk from milk bank in Taiwan
其他題名	
指導教授(中)	王果行
指導教授(英)	Guoo-Shyng Wang Hsu
校內全文開放日期	不公開
校外全文開放日期	不公開
全文不開放理由	

電子全文送交國圖.	同意
國圖全文開放日期.	2007.12.18
檔案說明	電子全文
電子全文	01
學位類別	碩士
畢業學年度	94
出版年	
語文別	中文
關鍵字	捐贈乳、母乳庫、早產兒、礦物質

(中)	
關鍵字 (英)	donor human milk, human milk bank, preterm infant, mineral
摘要 (中)	<p>母乳是嬰兒最佳的營養來源，當早產兒的母親無法提供母乳給自己的嬰兒時，可改由來自母乳庫的捐贈乳，本研究由民國九十四年二月至九十四年八月收集臺北市立聯合醫院 40 位捐乳婦女，包含產後 1-17 月的 249 個捐乳樣本，分析母乳中三大營養及鐵、鎂、磷、銅、鈣、鋅、硒、鋁的含量，進而評估餵食母乳庫捐贈乳之新生兒礦物質攝取狀況，並找出簡單預測母乳礦物質之因子。各成份含量為水份 88±2%；熱量百分比分別為：蛋白質 8±2%；脂肪 28±8%；鈣 21.7 ± 6.4 mg/100 ml；鎂 3.26 ± 0.54 mg/100 ml；磷 9.30 ± 1.56 mg/100 ml；銅 20.79 ± 11 μg/100 ml；鐵 126.4 ± 32.2 μg/100 ml；鋅 78.07 ± 62.46 μg/100 ml；硒 1.27 ± 0.31 μg/100 ml；鋁為 108.3 ± 24.2 μg/L，除水份、脂肪、鎂、鈣、鋁外，蛋白質及其他礦物質隨著哺乳增加有顯著的降低；生產一胎的捐贈乳鈣含量較生產胎數大於一胎者高 (P&lt;0.05)；鈣含量與捐乳婦女年齡呈負相關(P</p>
摘要 (英)	<p>Human milk is considered to be the optimal nutritional source for the infant. When mother's own milk is not available, one of the alternatives is donor milk from human milk bank. Human milk samples during the period of 1 to 17 months of lactation were collected from 40 donor women in Taipei City Hospital from February to August 2005. The proximal composition, calcium, phosphorus, magnesium, iron, copper, zinc, selenium and aluminium contents in the breast milk were analyzed. Then, dietary mineral intakes of newborn from human milk bank were evaluated. The results indicated that H<sub>2</sub>O, content of the breast milk was 88±2% while protein, fat and carbohydrate were 28± 8%, 8±2% and 64±8% (% calories) respectively. Macro-mineral contents (Ca, P and Mg) of the breast milk were 21.7 ± 6.4, 9.30 ± 1.56 and 3.26 ± 0.54 mg/100 ml. The trace elements concentrations of the milk samples were as following: iron, 126.4±32.2 mg/100 ml; copper, 20.79 ± 11 μg/100 ml; zinc, 78.07 ± 62.46 μg/100 ml; selenium, 1.27 ± 0.31 μg/100 ml and aluminium, 108.3 ± 24.2 μg/L. Except H<sub>2</sub>O, fat, carbohydrate, magnesium, calcium and aluminum, protein and other mineral markedly decrease as the lactation prolonged. The calcium content was higher (P</p>
論 文 目 次	<p>?目錄? 頁次 第一章 前 言.....1 第二章 文獻回 顧.....2 一、 捐贈乳之使 用.....2 二、評估 影響母乳中乳脂肪含量之因子.....4 三、母乳中礦物質缺乏與生物利用 率.....5 四、母乳礦物質濃度可能影 響因素之研究.....9 研究目</p>

的.....	11
第三章 材料與方	
法.....	12
一、	
母乳捐贈者資料及捐贈乳樣本收集.....	12
二、捐贈乳樣本之分	
析.....	13
第四章 統計方	
法.....	26
第五章 結	
果.....	27
一、母乳捐贈者之基本資	
料.....	27
二、建立母乳庫捐乳	
營養素基本資料.....	27
三、分析不同哺	
乳期，捐乳中營養素之變化.....	27
四、不同胎	
數捐贈者捐乳中礦物質含量之比較.....	28
五、捐	
贈乳者年齡與新生兒體重和第 1-2 月乳汁礦物質含量的相關性.....	28
第六章 討	
論.....	29
一、母乳中礦物質各含量與基本資料的相關性探	
討.....	29
二、探討母乳中營養素與礦物質隨著哺乳時	
期之變化並設定最佳捐乳時間.....	29
三、本捐贈乳與日本產後婦女母乳中	
礦物質含量的比較.....	30
四、探討母乳庫捐贈乳，對於新	
生兒礦物質攝取量之研究.....	31
五、對於使用母乳庫捐贈	
乳，礦物質攝取不足之解決策略.....	34
六、未來之努力方	
向.....	36
第七章 結	
論.....	38
第八章 參考文	
獻.....	61
目錄? 表一 各國母乳中鋅濃度比	
較.....	39
表二 各國母乳中銅	
濃度之比較.....	40
表三 各國母	
乳中鐵濃度比較.....	41
表四	
各國母乳中鈣濃度比較.....	42
表五 各國母乳中磷濃度比	
較.....	43
表六 各國母乳中鎂	
濃度比較.....	44
表七 各國母	
乳中硒濃度比較.....	45
表八	
DRC II ICP-MS 之操作參數.....	46
表九 母乳礦物質分析方法偵測極限與精密	
度.....	48
表十 母乳礦物質分析方法回收率測	
試.....	49
表十一 母乳 (1-17 月) 之水	
分、三大營養素百分比及礦物質組成.....	50
表十二 不同哺乳期	
母乳水份、三大營養素百分比及礦物質含量.....	51
表十三 不	
同胎數捐贈者 1-2 月母乳礦物質含量之比較.....	52
表	
十四 母親年齡、新生兒出生體重與 1-2 月母乳礦物質含量之相關	

	<p>性.....53 表十五 產後早產兒攝取母乳庫捐乳的礦物質含量.....54 表十六 產後足月病童由母乳庫捐乳每日攝食礦物質含量.....55 表十七 產後早產兒攝取母乳庫 1 個月捐贈乳的礦物質含量.....56 ?圖 目錄? 圖一 ICP-MS 的基本儀器構造.....15 圖二 ICP 燄炬(Torch)基本構造.....16 圖三 DRC-ICP-MS 儀器圖.....20 圖四 鐵氟龍消化瓶裝置.....22 圖五 母乳中元素之分析流程圖.....23 圖六 母乳庫捐贈乳與日本母乳中鈣濃度之比較.....57 圖七 母乳庫捐贈乳與日本母乳中磷濃度之比較.....57 圖八 母乳庫捐贈乳與日本母乳中鎂濃度之比較.....58 圖九 母乳庫捐贈乳與日本母乳中鐵濃度之比較.....58 圖十 母乳庫捐贈乳與日本母乳中銅濃度之比較.....59 圖十一 母乳庫捐贈乳與日本母乳中鋅濃度之比較.....59 圖十二 母乳庫捐贈乳與日本母乳中硒濃度之比較.....60</p>
<p>參 考 文 獻</p>	<p>蔡欣芳 (2002) 飲食型態與母乳中鉛、鎘、銅、鋅金屬元素濃度之關係研究。台北醫學大學碩士論文, 台北。史維廉 (1987) 我國足月產婦的母乳營養成分之研究。文化大學碩士論文, 台北。行政院衛生署 (2003) 國人膳食營養素參考攝取量及其說明, pp.459-463, 行政院衛生署, 台北市。臺北市立聯合醫院婦幼院區母乳推動小組編製 (2004) 母乳庫工作手冊。李嘉文 (2005) 母乳庫設置之文獻探討及對政府政策之建議。行政衛生署國民健康局 94 年度研究報告。Aggett PJ (2000) Trace elements of the micropremie. Clin Perinatol 27:119-129. Al-rashid RA and Spangler J (1971) Neonatal copper deficiency. N Engl J Med 285:841-843. Al-Awadi FM, Srikumar TS (2001) Determination of selenium concentration and its chemical forms in the milk of Kuwaiti and non-kuwaiti lactating mothers. J Trace Elem Exp Med 14:57-67. American Academy of Pediatrics Work Group on Breastfeeding (1997) Breastfeeding and the use of human milk. Pediatrics 100:1035-1039. American Academy of Pediatrics Committee on Nutrition (1985) Nutritional needs of low-birth-weight infants. Pediatrics 75:976-986. American Academy of Pediatrics Committee on Nutrition (1986) Aluminum toxicity in infants and children. Pediatrics 78:1150-1154. Arnaud J and Favier A (1995) Copper, iron, manganese, and zinc contents in human colostrum and transitory milk of French women. Sci Total Environ 159:9-15. Arnold LDW (2002) The cost-effectiveness of using banked donor milk in the neonatal intensive care unit: prevention of necrotizing enterocolitis. J Hum Lact 18:172-177. Atkinson SA (2000) Human milk feeding of the micropremie in Nutrition and Metabolism of the micropremie. Clin Perinatol 27:235-245. Benemariya H, Robberecht H and Deelstra H (1995) Copper, zinc, and selenium concentrations in milk from middle-class women in Burundi (Africa) throughout the first 10 months of lactation. Sci Total Environ 164:161-174. Beshgetoor D and L?nnerdal B (1997) Effect of marginal maternal zinc deficiency</p>

in rats on mammary gland zinc metabolism. *J Nutr Biochem* 8:573 – 578. Blasco IN, Perez AM and Elizaga IV (1996) Factores que determinan la concentracion de elementos traza en la leche maternal. *Acta Pediatr Esp* 54:827-832. Bosscher D, Caillie-Bertrand MV, Robberecht H, Dyck KV, Cauwenbergh RV and Deelstra H (2001) In vitro availability of calcium, iron, and zinc from first-age infant formulae and human milk. *J Pediatr Gastroenterol Nutr* 32:54-58. Bougle D, Bureau F, Voirin J, Neuville D and Duhamel JF (1992) A cross-sectional study of plasma and urinary aluminum levels in term and preterm infants. *J Parenter Enteral Nutr* 16:157-159. Butte NF, Garza C, Smith EO, Wills C, Nichols BL (1987) Macro- and trace-mineral intakes of exclusively breast-fed infant. *Am J Clin Nutr* 45:42-48. Caksen H, Ozturk A, Kurtoglu S and Tuncel M (2002) Reports of osteopenia/rickets of prematurity are on the increase because of improved survival rates of low birthweight infants. *J Emerg Med* 23:305-306. Casey CE, Neville MC and Hambidge KM (1989) Studies in human lactation : secretion of zinc, copper, and manganese in human milk. *Am J Clin Nutr* 49:773-785. Chan GM (1982) Human milk calcium and phosphate levels of mothers delivering term and preterm infants. *J Pediatr Gastroenterol Nutr* 1:201-205. Civitelli R and Avioli LV (1994) Calcium, phosphate, and magnesium absorption. In : *Physiology of the Gastrointestinal Tract* (Johnson LR ed) pp 2173 – 2181. Raven Press, New York. Committee on Nutrition of the preterm infant, European Society of Paediatric Gastroenterology and Nutrition (1987) Nutrition and feeding of preterm infants. *Acta Paediatrica Scand* S336:1-14. Coni E, Bellomonte G and Caroli S (1993) Aluminium content of infant formulas. *J Trace Elem Electrolytes Health Dis* 7:83-86. Collier SB, Richardson DS, Gura KM and Duggan C (2000) Parenteral nutrition. In: *Manual of pediatric nutrition* (Hendricks KM, Duggan C and Walker WA ed) pp258. BC Decker press, London. Dallman PR (1992) Changing iron needs from birth through adolescence. In: *Nutritional anemias* (Fomon SJ and Zlotkin SH, eds) pp. 29-38. Vevey/Raven Press, New York. Darlow BA and Austin NC (2003) Selenium supplementation to prevent short-term morbidity in preterm neonates. *Cochrane Database Syst Rev* 4:CD003312. Dewey KG (2001) Nutrition, growth, and complementary feeding of the breastfed infant. *Pediatr Clin North Am* 48:87-105. Dupont C (2003) Protein requirements during the first year of life. *Am J Nutr* 77:1544S-1549S. Domellof M, Lonnerdal B, Abrams SA and Hernell O (2002) Iron absorption in breast-fed infants: effects of age, iron status, iron supplements, and complementary foods. *Am J Clin Nutr* 76:198-204. Dorea JG (2000) Zinc in human milk. *Nutr Res* 20:1645-1688. Eckhert CD, Sloan MV, Duncan J R and Hurley L S (1977) *Science* 195: 789-790. Ehrenkranz RA, Gettner PA, Nelli CM, Sherwonit EA, Williams JE, Ting BT and Janghorbani M (1989) Zinc and copper nutritional studies in very low birth weight infants: comparison of stable isotopic extrinsic tag and chemical balance methods. *Pediatr Res* 26:298-307. Feeley RM, Eittenmiller RR, Jones JB and Barnhart H (1983) Calcium, phosphorus, and magnesium contents of human milk during early lactation. *J Pediatr Gastroenterol Nutr* 2:262 – 267. Feeley RM, Eitenmiller RR, Jones JB and Barnhart H (1983) Copper, iron, and zinc contents of human milk at early stages of

lactation. *Am J Clin Nutr* 37:443-448. Fomon SJ (1974) In : *Infant Nutrition*, p 364. WB Sanders, Philadelphia. Forbes G B(1976) Calcium accumulation by the human fetus. *Pediatrics* 57: 976 – 977. Frkovic A, Medugorac B and Alevic-Juretic A (1996) Zinc levels in human milk and umbilical cord blood. *Sci Total Environ* 192:207-212. Freundlich M, Zilleruelo G, Abitbol C, Strauss J, Faugere MC and Malluche HH (1985) Infant formula as a cause of aluminum toxicity in neonatal uraemia. *Lancet* 2:527-529. Gartner LM, Morton J, Lawrence RA, Naylor AJ, O' Hare D and Schanler RJ (2005) Breastfeeding and the use of human milk. *Pediatrics* 115:496 – 506. Goldman AS (2000) Modulation of the gastrointestinal tract of infants by human milk. *Interfaces and interactions. An evolutionary perspective. J Nutr* 130:426S-431S. Grantham-McGregor S and Ani C (2001) A review of studies on the effect of iron deficiency on cognitive development in children. *J Nutr* 131:649S-668S. Greene H, Hambidge K, Schanler R and Tsang RC (1988) Guidelines for the use of vitamins, trace elements, calcium, magnesium, and phosphorus in infants and children receiving total parenteral nutrition: report of the Subcommittee on Pediatric Parenteral Nutrient Requirements from the Committee on Clinical Practice Issues of the American Society for Clinical Nutrition. *Am J Clin Nutr* 48:1324. Gross SJ, Buckley RH, McAllister DC, David RJ, Faix RG (1981) Elevated IgA concentration in milk produced by mothers delivered of preterm infants. *J Pediatr* 99:389-393. Gross SJ, Geller J, Tomarelli RM (1981) Composition of breast milk from mother of preterm infants. *Pediatrics* 68:490-493. Hambidge KM (1976) The importance of elements in infant nutrition. *Curr Med Opinion* 44. Hambidge KM, Walravens PA, Casey CE, Brown R M and Bender C (1979) *J Pediatr* 94:607-608. Hawthorne KM, Griffin IJ and Abrams SA (2004) Current issues in nutritional management of very low birth weight infants. *Minerva Pediatr* 56:359-372. Henderson TR, Fay TN and Hamosh M (1998) Effect of pasteurization on long chain polyunsaturated fatty acid level and enzyme activities of human milk. *J Pediatr* 132:876-878. Higashi A, Ikeda T, Uehara I and Matsuda I (1982) Zinc and copper contents in breast milk of Japanese women. *Tohoku J Exp Med* 137:41-47. Higashi TH, Kuroki Y and Matsuda I (1983) Longitudinal changes in selenium content of breast milk. *Acta Paediatr Scand* 72:433-436. Hussain M, Sikder ZU, Wahed MA, Haque A and Jahan F (1996) Zinc concentration of breast milk and its diurnal variation in Bangladeshi mothers. *Bangladesh Med Res Counc Bull* 22:70-73. Hurley LS, Duncan JR, Sloan MV and Eckhart C D (1977) Zinc-binding ligands in milk and intestine: a role in neonatal nutrition? *Proc. Natl. Acad. Sci. U.S.A.* 74:3547-3549. Itabashi K, Miura A, Okuyama K, Takeuchi T and Kitazawa S (1999) Estimated nutritional intake based on the reference growth curves for extremely low birthweight infants. *Pediatr Int* 41:70-77. Karra MV and Kirksey A (1988) Variation in zinc, calcium, and magnesium concentrations of human milk within a 24-hour period from 1 to 6 months of lactation. *J Pediatr Gastroenterol Nutr* 7:100-106. Karra MV, Kirksey A, Galal O, Bassily NS, Harrison GG and Jerome NW (1988) Zinc, calcium, and magnesium concentrations in milk from American and Egyptian women throughout the first 6 months of lactation. *Am J Clin Nutr* 47:642-648. Kelleher SL and L'Annunziata B (2001) Long-term marginal



intakes of zinc and retinol affect retinol homeostasis without compromising circulating levels during lactation in rats. *J Nutr* 131:3237 – 42. Keenan BS, Buzek SW, Garza C, Potts E and Nichols BL (1982) Diurnal and longitudinal variations in human milk sodium and potassium: implication for nutrition and physiology. *Am J Clin Nutr* 35:527-534. Kirksey A, Ernst JA, Roepke JL and Tsai T-L (1979) Influence of mineral intake and use of oral contraceptives before pregnancy on the mineral content of human colostrums and of more mature milk. *Am J Clin Nutr* 32:30-39. Koo WW, Kaplan LA and Krug-Wispe SK (1988) Aluminum contamination of infant formulas. *J Parenter Enteral Nutr* 12:170-173. Koo WW and Kaplan LA (1988) Aluminum and bone disorder: with specific reference to aluminum contamination of infant nutrients. *J Am Coll Nutr* 7:199-214.

Kumpulainen J, Vuori E, Kuitunen P, Makinen S and Kara R (1983) Longitudinal study on the dietary selenium intake of exclusively breast-fed infants and their mothers in Finland. *Int J Vit Nutr Res* 53:420-426. Kumpulainen J, Salmenpera L, Siimes MA, Koivistoinen P, Lehto J and Perheentupa J (1987) Formula-feeding results in lower selenium status than breast-feeding or selenium supplemented formula feeding. *Am J Clin Nutr* 45:49-53. Kunz C and Lonnerdal B (1992) Reevaluation of the whey protein/ casein ratio of human milk. *Acta Paediatr* 81:107-112.

Little C, Olinescu R, Reid KG and O'Brien PJ (1970) Properties and regulation of glutathione peroxidase. *J Biol Chem* 245:3632-3636. Litov RE, Sickles VS, Chan GM, Springer MA and Cordano A (1989) Plasma aluminum measurements in term infants fed human milk or a soy-based infant formula. *Pediatrics*.84:1105-1107.

Lombeck I, Kasperk K, Bonnermann B, Fienendegen LE and Bremer HJ (1978) Selenium content of human milk, cow's milk and cow's milk infant formulas. *Eur J Paediatr* 129:139-145. Lonnerdal B (1996) Bioavailability of copper. *Am J Clin Nutr* 63:821S-829S. Lonnerdal B (1986) Effects of maternal dietary intake on human milk composition. *J Nutr* 116:499 – 513. Lozoff B, Jimenez MD, Hagen J, Mollen E and Wolf AW (2000) Poorer behavioral and developmental outcome more than 10 years after treatment for iron deficiency in infancy. *Pediatrics* 105:E51.

Lucas A and Cole T (1991) Breast milk and neonatal necrotizing enterocolitis. *Lancet* 336:1519-1523. Lucas A (1993) Enteral Nutrition. In: Nutritional needs of the preterm infant .scientific basis and practical guidelines (Tsang RC, Lucas A, Uauy R and Zlotkin S, eds) pp. 209-223. Williams & Wilkins press, New York.

Lundstrom U, Siimes MA and Dallman PR (1977) At what age does iron supplementation become necessary in low-birth-weight infants? *J Paediatr* 91:878-883.

Mandel D, Lubetzky R, Dollberg S, Barak S and Mimouni FB (2005) Fat and energy contents of expressed human breast milk in prolonged lactation. *Pediatrics* 116:432-435. Mandic ML, Grgic J, Grgic Z, Seruga M and Hasensy D (1995) Aluminium levels in human milk. *Sci Total Environ* 170:165-170. Makhoul IR, Sammour RN, Diamond E, Shohat I, Tamir A and Shamir R (2004) Selenium concentrations in maternal and umbilical cord blood at 24-42 weeks of gestation: basis for optimization of selenium supplementation to premature infants. *Clin Nutr*. 23:373-381. Mahan LK, Escott-Stump (2000) Nutrition for the low-birth-weight infant. In: Krause's Food, Nutrition, & Diet Therapy pp.237 W.B Saunders,

Philadelphia. McGuire W and Anthony MY (2003) Donor human milk versus formula for preventing necrotizing enterocolitis in preterm infants: systematic review. *Arch. Dis. Child. Fetal. Neonatal Ed* 88:F11-F14. McMillan JA, Landaw SA and Oski FA (1976) Iron sufficiency in breast-fed infants and the availability of iron from human milk. *Pediatrics* 58:686. Mcore MEC, Moran JR and Greene HL (1984) Zinc supplementation in lactating women: evidence for mammary control of zinc secretion. *J Pediatr* 105:600-602. Metha NR, Hamosh M, Bitman J and Wood DL (1998) Adherence of medium-chain fatty acids to tube feeding of human milk during gavage feeding. *J Pediatr* 112:474-6. Mercado M, Yu VY and Gill A (1990) Clinical experience with preterm formulas in very low birthweight infants. *J Singapore Paediatr Soc* 32:137-143. Millar KR and Sheppard AD (1972) Alpha-tocopherol and selenium levels in human and cow's milk. *N Z J Sci* 15:3-15. Milner C, Sherman L and Picciano MF (1987) Distribution of selenium in human milk. *Am J Clin Nutr* 45:617-624. Moser PB and Reynolds RD (1983) Dietary zinc intake and zinc concentrations of plasma, erythrocytes, and breast milk in antepartum and postpartum lactating and nonlactating women: a longitudinal study. *Am J Clin Nutr* 38:101 - 108. Nagra AS (1989) Longitudinal study in biochemical composition of human milk during first year of lactation. *J Trop Pediatr* 35:126 - 128. Ohtake M and Tamutra T (1993) Change in zinc and copper concentrations in breast milk and blood of Japanese women during lactation. *J Trop Pediatr* 39: 189-200. Onyango AW, Receveur O and Esrey SA (2002) The contribution of breast milk to toddler diets in western Kenya. *Bulletin of the World Health Organization*. 80:292-299. Oski FA (1985) Iron requirements of the premature infant. In: *Vitamin and mineral requirements in preterm infants* (Tsang RC eds) pp.9-21. Marcel Dekker press, New York. Paul VK, Singh M, Srivastava LM, Arora NK and Deorari AK (1997) Macronutrient and energy content of breast milk of mothers delivering prematurely. *Indian J Pediatr* 64:379-382. Picciano MF and Guthrie HA (1976) Copper, iron, and zinc contents of mature milk. *Am J Clin Nutr* 29:242-254. Picciano MF (1978) Mineral content of human milk during a single nursing. *Nutr Rep Int* 18:5-9. Pollitt E (1993) Iron deficiency and cognitive function. *Ann Rev Nutr* 13:521-37. Prentice A and Bates C J (1994) Adequacy of dietary mineral supply for human bone growth and mineralisation. *Eur. J. Clin. Nutr.* 48: 161 - 177. Prentice A, Jarjou LMA, Cole TJ, Stirling DM and Dibba B (1995) Calcium requirements of lactating Gambian mothers: effects of a calcium supplement on breast-milk calcium concentration, maternal bone mineral content, and urinary calcium excretion. *Am J Clin Nutr* 62:58-67. Prentice A (2003) Micronutrients and the bone mineral content of the mother, fetus and newborn. *J Nutr* 133:1693S-1699S. Reifen RM and Zlotkin S (1993) Microminerals. In: *Nutritional needs of the preterm infant. Scientific basis and practical guidelines* (Tsang RC, Lucas A, Uauy R, Zlotkin S, eds) pp.195-207. Williams and Wilkins press, Baltimore. Rossipal E and Krachler M (1998) Pattern of trace elements in human milk during the course of lactation. *Nutr Res* 18:11-24. Rotruck JT, Pope AL, Ganther ME, Swanson AB, Hafeman DG and Hoekstra WG (1973) Selenium: Biochemical role as a component of glutathione peroxidase. *Science* 179:588-590. Rolfes SR, DeBruyne LK and Whitney EN

(1990) Life Span Nutrition. In: Laction, breast milk, and formula pp.182 West press, St. Paul. Salle BL, Senterre J and Putet G (1992) Calcium, phosphorus, magnesium, and vitamin D requirements in premature infants. Nutrition of the Low Birth weight Infant. Nestle Nutrition Workshop Series 32:125-35. Schanler RJ and Hurst NM (1994) Human milk for the hospitalized preterm infant. Semin Perinatol 8:476-484. Schanler RJ, Shulman RJ and Lau C (1999) Feeding strategies for premature infants: beneficial outcomes of feeding fortified human milk versus preterm formula. Pediatrics 103:1150-1157. Schanler RJ, Hurst NM and Lau C (1999) The use of human milk and breastfeeding in premature infants. Clin Perinatol 26:379-398. Schanler RJ, Abrama SA, Garza C (1988) Bioavailability of calcium and phosphorus in human fortifiers and formula for very low birth weight infants. J Pediatr 113:95-100. Schanler RJ (1996) Human milk fortification for premature infants. Am J Clin Nutr 64:249-250. Sedman A (1992) Aluminum toxicity in childhood. Pediatr Nephrol 6:383-393. Shanler RJ (1995) Suitability of human milk for the low-birth weight infant. Clin Perinatol 22:207-222. Schwarz K and Foltz CM (1957) Selenium as an integral part of factor 3 against dietary necrotic liver degeneration. J Am Chem Soc 78:3292-3293. Shehede N, Aslih N, Shihab S, Wweman MJ, Sheinman R and Shamir R (2006) Human milk beyond one year post-partum: lower content of protein, calcium, and saturated very long-chain fatty acids. J Pediatr 148:122-124. Shearer TR and Hadjimarkos DM (1973) Geographic distribution of selenium in human milk. Arch Environ Health 30:230-233. Shen L, Van Dael P, Luten J and Deelstra H (1996) Estimation of selenium bio-availability from human, cows, goat and sheep milk by an in vitro method. Int J Food Sci Nutr 47:75-81. Silvestre MD, Lagarda MJ, Farre R, Martinez-costa C, Brines J, Molina A and Clemente AG (2000) A study of factors that may influence the determination of copper, iron, and zinc in human milk during sampling and in sample individuals. Biol Trace Element Res 76:217-227. Silvestre MD, Martinez-costa C, Lagarda MJ, Brines J, Farre R and Clemente AG (2001) Copper, iron, and zinc contents in human milk during the first three months of lactation: a longitudinal study. Biol Trace Element Res 80:1-11. Smith AM, Picciano MF and MilnerJA (1981) Selenium intakes and status of human milk and formula fed infants. Am J Clin Nutr 35:521-526. Suzuki S, Lucas A, Lucas PJ (1983) Immunoglobulin concentration and bacterial antibody titres in breast milk from mothers of preterm and term infants. Acta Paediatr Scand 72:671-677. Tanaka T, Maeda T, Imai S, Hayashi Y, Funakawa K and Nose T (1994) Aluminum levels in breast milk and infant formulae in Japan. Trace Elem Electrolytes 11:65-67. Thompson JN, Erdody P and Smith DC (1975) Selenium content of food consumed by Canadians. J Nutr 105:274-277. Thompson JN and Scott ML (1969) Role of selenium in the nutrition of the chick. J Nutr 97:335-42. Tully DB, Jones F and Tully MR (2001) Donor milk: what's in it and what's not. J Hum Lact 17:152-155. Tully MR, Lockhart-Borman L and Updegrove K (2004) Stories of success: the use of donor milk is increasing in North America. J Hum Lact 20:75-77. Underwood E J (1977) Trace Elements in Human and Animal Nutrition. pp. 196-242. Academic Press, New York. Varo P, Alfthan G, Ekholm P, Aro A, Koivisto P (1988) Selenium intake and

	<p>serum selenium in Finlandeffect of soil fertilization with selenium. Am J Clin Nutr 48: 324-329. Vaughan LA, Weber CW and Kamberling SR ( 1977 ) Effect of the duration of laction on trace mineral content of human milk. Fed Proc 34:124-1127. Vaughan LA, Weber CW and Kamberling SR ( 1979 ) Longitudinal changes in the mineral content of human milk. Am J Clin Nutr 32:2301-2306. Vieira AA, Moreira MEL, Rocha AD, Pimenta HP and Lucena SL ( 2004 ) Assessment of the energy content of human milk aministered to very low birth weight infants. J Pediatr 80:490-494. Vuori E, Makinen SM, Kara R and Kuitunen P ( 1980 ) The effects of the dietary intakes of copper, iron, manganese,and zinc on the trace element content of human milk. Am J Can Nutr 33:227-231. Weber A, Loui A, Jochum F, Buhner C and Obladen M ( 2001 ) Breast milk from mothers of very low birth weight infants: variability in fat and protein content. Acta Paediatr 90:772-775. Wight NE ( 2001 ) Donor human milk for preterm infants. J Perinatol 21:249-254. Williams MMF ( 1983 ) Selenium and glutathione peroxidase in mature human milk. Proc Univ Otago Med Sch Dunedin 61:20-21. Worthington-Roberts BS and Williams SR ( 1993 ) Human milk composition and infant growth and development. In: Nutrition In Pregnancy And Lactation pp.363-367 Mosby-Year Book . Missouri. Worthington-Roberts BS and Williams SR ( 1996 ) Nutrition throughout the life cycle. In: Laction and Human milk pp:173 Mosby-Year Book. St. Louis. World Health Organization ( 2000 ) Malnutrition: the global picture. Geneva: The Organization. World Health Organization ( 1989 ) Evaluation of certain food additives and contaminants: Thirty-third report of the joint FAO/WHO Expert Committee on Food additive. WHO Tech Rep Serv 776:1-64. Yamawaki N, Yamada M, Kan-no T, Kojima T, Kaneko T and Yonekubo A ( 2005 ) Macronutrient, mineral and trace element composition of breast milk from Japanese women. J Trace Elem Med Biol 19:171-181. Yu VY ( 2005 ) Extrauterine growth restriction in preterm infants: importance of optimizing nutrition in neonatal intensive care units.Croat Med J 46:737-743. Zachara BA and Pilecki A ( 2001 ) Daily selenium intake by breast-fed infants and the selenium concentration in the milk of lactating women in western Poland. Med Sci Monit 7:1002-1004. Zlotkin S ( 2003 ) Clinical nutrition: 8. The role of nutrition in the prevention of iron deficiency anemia in infants, children and adolescents. CMAJ 168:59-63. Zoren-Groben DV, Schrijver J, Van Der Berg H and Berger HM ( 1987 ) Human milk vitamin content after pasteurization. Arch Dis Child 62:162-165.</p>
論 文 頁 數	74
附 註	
全 文 點	

閱次數	
資料建置時間	
轉檔日期	
全文檔存取記錄	
異動記錄	M admin Y2008.M7.D3 23:18 61.59.161.35