Dietary intakes and blood folat, vitamin B_{12}, zinc and copper levels in young

Nurcan Yabancı, Nevin Şanlıer

Gazi University, Department of Food and Nutrition Education, Ankara, TURKEY

ABSTRACT

Background: There have been considerable advances in our knowledge on the function of essential micronutrients such as vitamins and minerals for optimal health and prevention of diseases.

Aims: To determinate blood folat, vitamin B_{12}, zinc and copper levels and daily dietary intake in young.

Methods: 30 boys, 30 girls between 19-23 years of age were screened for dietary intakes and blood folat, vitamin B_{12}, zinc and copper levels.
Results: Blood folat, vitamin B_{12}, zinc and copper levels were 8.87±0.51 ng/mL, 251.03±12.22pg/mL, 100.64±3.61 mcg/dL and 114.83±4.02 mcg/dL respectively. In addition inadequate intakes of folat, vitamin B_{12}, zinc and copper were determined in 46.7%, 40.0%, 23.3%, and %3.3 respectively.

INTRODUCTION

It is recognized that the adverse effects of micronutrient deficiencies on growth and development, in particular mental function, physical work, and compromised immune status, warrant immediate attention. For the coming millennium, we need to examine optimal nutritional recommendations for micronutrients, as well as for macronutrients to lower the risk of chronic diseases that are major problems in the world today.

The purpose of this study was to evaluate blood micronutrient such as folat, vitamin B_{12}, zinc and copper levels and dietary intake in young.

METHODS

The participants consist of 30 girls (mean age: 20.7±0.2 y) and 30 boys (mean age:20.6±0.2 y) students in Gazi University Department of Food and Nutritional Education in Turkey.

Blood folat, vitamin B_{12}, zinc and copper levels were analyzing at the local Ankara Government Hospital where the actual biochemical analyses were made. The average energy and nutrient content for each individual's diet were analyzed using food composition tables for preparing Turkish foods, and compared to Dietary References Intakes (DRI). The data were analyzed and managed using the Statistical Package for Social Sciences (SPSS) for Windows version 12.0.

Figure 1.Blood folat, vitamin B_{12}, zinc and copper levels in young

Parametres	Boys (n:30) mean±SD	Girls (n:30) mean±SD	p
Folat (pg/mL)	7.51±3.1	10.2±4.3	0.007*
Vitamin B_{12} (pg/mL)	244.1±13.5	257.9±112.5	0.58
Zinc (µg /dL)	110.1±29.6	119.7±32.4	0.24
Copper (µg/dL)	109.4±28.9	91.9±24.6	0.001*

*p<0.01

Figure 2.The evaluation of daily energy and nutrient intake

Daily intake	Boys (n:30) mean±SD	Girls (n:30) mean±SD	p
Energy (kkal)	2261.4±961.3	1429.9±561.7	0.0*
Vitamin B_6 (mg)	1.44±0.57	1.04±0.44	0.03*
Folat (mcg)	415.2±188.7	225.1±80.2	0.0*
Vitamin B_{12} (mcg)	2.82±2.56	1.98±1.20	0.11
Vitamin C (mg)	97.8±50.8	80.2±41.3	0.15
Zinc (mg)	11.57±6.50	7.70±3.12	0.005*
Copper (mg)	1.87±0.76	1.33±1.14	0.04*

*p<0.01

RESULTS

Blood folat, vitamin B_{12}, zinc and copper levels were 8.87±0.51 ng/mL, 251.03±12.22pg/mL, 100.64±3.61 mcg/dL and 114.83±4.02 mcg/dL respectively. According to young' s blood levels, 1.7% folat, 25% vitamin B_{12}, 13.3% zinc and 3.3% copper were low. In addition we estimated that daily folat, vitamin B_{12}, zinc and copper dietary intake were 320.16±22.3 mcg, 2.40±.0.26 mcg, 9.63±0.69 mg, 1.59±0.12 mg respectively, and when compare to DRI, youngs were inadequate micronutrient intake. Inadequate intakes of folat, vitamin B_{12}, zinc and copper were determined in 46.7%, 40.0%, 23.3%, and %3.3 respectively.

CONCLUSION

Micronutrients play a central role in metabolism and in the maintenance of tissue function. An adequate intake therefore is necessary to sustain metabolism and tissue function. Therefore, daily adequate micronutrient intake and their blood levels were monitored together.

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Figure 3. Evaluation of the levels of sufficiency of daily energy and nutrient intake (n:60)

		Insufficient		Sufficient		Over sufficient		
		n	%	n	%	n	%	p
Energy	B	10	33.3	19	63.3	1	3.3	
	G	21	70.0	9	30.0	-	-	0.014*
	T	31	51.7	28	46.7	1	1.7	
Protein	B	1	3.3	11	36.7	18	60.0	
	G	4	13.3	17	56.7	9	30.0	0.048*
	T	5	8.3	28	46.7	27	45.0	
Vit. B_6	B	4	13.3	20	66.7	6	20.0	
	G	13	43.3	14	46.7	3	10.0	0.033*
	T	17	28.3	34	56.7	9	15.0	
Folat	B	7	23.3	16	53.3	7	23.3	
	G	21	70.0	9	30.0	-	-	0.00*
	T	28	46.7	25	41.7	7	11.7	
Vit. B_{12}	B	10	33.3	10	33.3	10	33.3	
	G	14	46.7	10	33.3	6	20.0	0.44
	T	24	40.0	20	33.3	16	26.7	
Zinc	B	8	26.7	18	60.0	4	13.3	
	G	6	20.0	20	66.7	4	13.3	0.82
	T	14	23.3	38	63.3	8	13.3	
Copper	B	-	-	4	13.3	26	86.7	
	G	2	6.7	17	56.7	11	36.7	0.0*
	T	2	3.3	21	35.0	37	61.7	

P<0.05, B: *Boys,* ***G:*** *Girls,* ***T:*** *Total*