

Zinc and Copper in Colostrum

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The Zn (Zinc) and Cu (Copper) contents of the first day milk from 117 Brazilian mothers were examined in relation to maternal age, parity and number of miscarriages. In parallel, household water was analyzed for the contents of the same trace elements. No significant relationship was found between levels of Zn and Cu and the aforementioned factors.

Key words: Colostrum, Copper, Zinc.

Trace elements, including zinc (Zn) and copper (Cu), are crucial for the functioning of organ systems in the human body, because of their role in several metabolic pathways, growth processes, cell development and protein synthesis. The literature provides little specific information on the content of Zn and Cu in colostrum. Though some studies have been done to estimate their content in early lactation(1-4), the information on concentrations during the initial three days of lactation is scarce(2,4).

Subject and Methods

A total of 117 postpartum healthy(5) mothers in the maternity ward of Associação de Amparo à Maternidade e Infância volunteered to provide colostrum samples for this study. None of the infants showed malformations or clinically detectable impairment. Samples were collected by manual expression on the 2nd day postpartum at the milk bank of the institution.

Information on the maternal age, parity, occupation, previous miscarriages, smoking and alcohol consumption was obtained. In parallel, household water from individual faucets was analyzed. The specimens were digested with 65% nitric acid. The treatment yielded a yellowish

solution containing a small globule of fat that, upon cooling, was removed with a platinum loop. Analyses were carried out using atomic absorption spectrometry.

Statistical tests of Mann–Whitney and Kruskal–Wallis were applied. Differences at $P < 0.05$ were considered statistically significant.

Results

The mean age of participating mothers was 22.1 years and their parity ranged from 1 to 8. As many as 55.6% ($n = 65$) were housewives, 14.5% were students, and 29.8% had other occupations. Of the 117 participants, 9.4% reported having had at least one miscarriage. Smoking was reported only in 1.7%. Alcohol usage was not reported. No significant differences were found between any pair of these three groups (*Table I*).

Zn and Cu levels in the water samples were lower than the analytically detectable range.

Discussion

The average concentration of Zn in colostrum was 1.27 ± 0.78 mg%, whereas reported levels were 0.25-0.9 mg% in the beginning of lactation(6-10). One of the few studies(2) that specifies the day of

What this Study Adds

- Zn and Cu concentrations in colostrum were 1.22 ± 0.78 mg% and $0.18 \pm$ mg%, respectively, reflecting their requirements by neonates during early lactation in Campo Grande, Mato Grosso do Sul, Brazil; these were not related to mother's age, parity, and history of miscarriage.

TABLE I – Zinc and Copper Content of Colostrum of Healthy Mothers

		Number of participants	Zn (mg/dL) Mean \pm SD	Cu (mg/dL) Mean \pm SD
	Total number	117	1.27 ± 0.78	0.13 ± 0.08
Abortions*	≥ 1	11	1.39 ± 0.65	0.13 ± 0.08
	none	106	1.26 ± 0.79	0.14 ± 0.09
Parity*	< 3	100	1.19 ± 0.58	0.13 ± 0.08
	≥ 3 and < 5	13	1.49 ± 0.79	0.13 ± 0.09
	≥ 5	4	2.53 ± 0.72	0.10 ± 0.08
Age*	14 – 21	62	1.23 ± 0.63	0.13 ± 0.08
	22 – 29	45	1.20 ± 0.58	0.14 ± 0.08
	≥ 30	10	1.81 ± 0.75	0.12 ± 0.08

* The intergroup differences are not statistically significant ($P < 0.05$).

collection (2nd day postpartum) gives a similar value of 1.15 ± 0.47 mg% for Zn, content in Denver, Colorado, USA, a city with nearly the same population as Campo Grande.

Data on Cu are scarce in the literature. In the present study, the average value of Cu in colostrum was 0.18 ± 0.08 mg%. Lonnerdal(3) reports mean values from 0.04 to 0.06 mg%, whereas other authors describe lower levels, from 0.02 to 0.04 mg% (1-3,7-10). The above mentioned data(2) are also much lower, 0.05 ± 0.03 mg%. Thus, Cu concentrations in colostrum in Campo Grande are almost fourfold higher than in Denver, Colorado. It cannot be from local water, since Cu concentrations in the households supply were insignificant. Nor can it be meat since its consumption in Mato Grosso do Sul in 2005 was 29.5 kg per capita, while in Denver in 1984 – 1988, when Casey's data were collected, it was 64 kg.

In the present study, no significant differences in Zn and Cu contents were found regarding parity and history of miscarriage, which is in agreement with the findings of Felley(4) but not with those of Cumming(7) and Kirsten(8).

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Prevalence of Eating Disorders and Psychiatric Co-morbidity among Children and Adolescents

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There are no prevalence or co-morbidity studies on eating disorders in India. This retrospective chart review studied the prevalence and psychiatric co-morbidity among juveniles with eating disorders. Forty-one cases with ICD-10 diagnosis of eating disorders were identified and analyzed. The prevalence of eating disorders was 1.25%. Psychogenic vomiting was the commonest eating disorders and anorexia nervosa the emerging eating disorder. The most common co-morbidities were depression, intellectual disability, and dissociative disorder.

Key words: *Children, Eating disorders.*

Introduction

The prevalence of eating disorders (ED) in this part of the world is lower than that of Western countries but appears to be increasing. Current research findings about ED in India seem to be moving in two different directions at once. On one hand there is increasing recognition of eating disorders within the multicultural Indian population(1). On the other, a persisting belief that the culture-bound syndrome of eating disorders is alien to India, and non-western cultures shield individuals from developing eating disorders(2,3). There are no prevalence or co-morbidity studies on ED in India. We conducted this study to determine the period prevalence of eating disorders,, and document the associated morbidities.

Subjects and Methods

Consecutive children and adolescents upto 18 years of age (n = 3274) attending the Child and Adolescent Psychiatry Unit, Christian Medical College and Hospital, Vellore, from January 2000 to December 2005 were studied and those with an ICD-10 diagnosis of eating disorders (F 50.0 to F 50.9) were identified from unit registry. Reversible anonymization, restricted access and disclosure of the obtained data ensured confidentiality. A psychiatrist reviewed the case notes for demographic and illness details made by a multi-disciplinary treating team. Appropriate bivariate statistical analyses were done using SPSS and EPI-INFO.