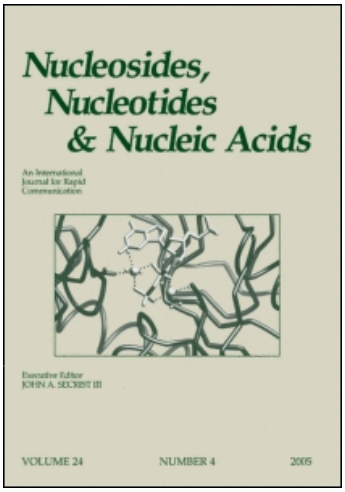

Nucleosides, Nucleotides and Nucleic Acids
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713597286

Serum Folate and Vitamin B12 Levels in Children from Mozambique

R. Leoncini[a]; D. Vannoni[a]; R. Guerranti[a]; G. Cinci[a]; A. Tabucchi[a]; F. Carlucci[a]; E. Marinello[a]; A. B. Agostinho[b]
[a] Department of Medicina Interna, Sc. Endocrino Metaboliche e Biochimica, University of Siena, Siena, Italy [b] Inst. of National de Saude, Ministèrio de Sapide, Maputo, Mozambique

Online publication date: 27 October 2004

To cite this Article Leoncini, R. , Vannoni, D. , Guerranti, R. , Cinci, G. , Tabucchi, A. , Carlucci, F. , Marinello, E. and Agostinho, A. B.(2004) 'Serum Folate and Vitamin B12 Levels in Children from Mozambique', Nucleosides, Nucleotides and Nucleic Acids, 23: 8, 1301 — 1303
To link to this Article: DOI: 10.1081/NCN-200027556
URL: http://dx.doi.org/10.1081/NCN-200027556

NUCLEOSIDES, NUCLEOTIDES & NUCLEIC ACIDS
Vol. 23, Nos. 8 & 9, pp. 1301–1303, 2004

Serum Folate and Vitamin B12 Levels in Children from Mozambique

R. Leoncini,[1] D. Vannoni,[1] R. Guerranti,[1] G. Cinci,[1] A. Tabucchi,[1] F. Carlucci,[1] E. Marinello,[1,*] and A. B. Agostinho[2]

[1]Department of Medicina Interna, Sc. Endocrino Metaboliche e Biochimica, University of Siena, Siena, Italy
[2]Inst. of National de Saude, Ministèrio de Sapide, Maputo, Mozambique

ABSTRACT

In order to investigate the behaviour of biochemical parameters in children from Mozambique, we have determined the serum levels of folic acid and vitamin B12, two well known markers of nutritional anemia. We have correlated their values with other blood parameters and have evidenced potential interesting relationship between folate content and platelets count.

Key Words: Vitamin B12; Folic acid; Anemia; Mozambique children.

INTRODUCTION

Folate and vitamin B12 deficiencies are two unequivocal nutritional anemias of man.[1,2] Folate is a coenzyme in nucleotide metabolism, and is essential for normal development of red blood cells. It has been used in the prevention and treatment of folic acid anemia. Vitamin B12 is essential for normal folic acid metabolism; it is involved in the formation of red blood cells and the maintenance of central nervous system.

*Correspondence: E. Marinello, Department of Medicina Interna, Sc. Endocrino Metaboliche e Biochimica, University of Siena, Siena, Italy.

DOI: 10.1081/NCN-200027556
1525-7770 (Print); 1532-2335 (Online)

Table 1. Comparison of folic acid and vitamin B12 levels in children from Mozambique and Italy.

Folic acid (pg/mL)		Vitamin B12 (ng/mL)	
Mozambique	Italy	Mozambique	Italy
6.3 ± 3.4	9.0 ± 3.5	782.7 ± 537.1	520.0 ± 190.0

Values are expressed as Mean ± S.D.

MATERIALS AND METHODS

We have studied serum folate and vitamin B12 content in 173 healthy children (80 males and 93 females) aged between 6 and 16 years (mean age 11.5 ± 2.9), frequenting schools of Maputo in Mozambique. The children were fed to a standard diet according to the FAO's indications.[3] The children were submitted to complete blood count and many different clinical tests as glycaemia, cholesterol, Ca2+, Mg2+, total proteins, albumin, Fe3+.

Statistical analysis were performed using Prism 4 for Windows (GraphPad Software, Inc).

In our analysis we have used the radioassay kit Vitamin B12 [57Co]/Folate [125I] from ICN Pharmaceuticals, Diagnostic Division (Orangeburg, NY 10962/USA—www.icndiagnostics.com).

RESULTS

No analytical parameter showed statistical difference related to sex, so we have studied the children as an unique group.

All the data have passed the Kolmogorov-Smirnov test for normal distribution.

Serum folate and vitamin B12 levels are reported in Table 1. In Table 1 are reported (only for a numerical comparison) the reference values used in an Italian population similar in age and distribution (250 healthy children; 118 males and 132 females; mean age 10.8 ± 3.2).

The correlation between various metabolites showed an interesting relationship between folate and platelets content (mean value 198.00 ± 91.66*10^3/μL). The linear equation describing this relationship in Mozambique data is: [folate] = 0.01573[platelet] + 3.574 ($F = 24.22$; $p < 0.0001$). Also MCV (mean value 81.33 ± 8.43 fL) and HCT (mean values 31.91 ± 5.91 %) showed an extremely significant positive correlation with folate content.

DISCUSSION

It is well known that folate deficiency occurs in patients with megaloblastic anemia, hypersegmentation of the granulocytic nuclei or iron deficiency, while vitamin B12 deficiency is associated with pernicious anemia, gastric or intestinal damage and

purely vegetarianism. Some authors reported an association between folic acid deficiency and severe thrombocytopenia or haemorrhage.

Our result could reflect an interesting approach to the study of nucleotide metabolism in subjects from Mozambique, and specifically the role of folic acid in the transformation of their megakaryocytes.

REFERENCES

1. Herbert, V. Introduction to the nutritional anemias. Sem. Hemat. **1970**, *7*, 2–5.
2. Herbert, V. *Modern Nutrition in Health and Disease*, 5th Ed.; Goodhart, R.S., Shils, M.E., Eds.; Lea & Febirger: Philadelphia, 1973.
3. *Agriculture Food and Nutrition for Africa—A Resource Book for Teachers of Agriculture by Food and Nutrition Division—Ed.*; FAO Information Division: Rome, 1997.