Online publication ahead of print, AJMHS Vol 65, 2024

The Current State of Knowledge on the Role of Folic Acid in Neural Tube Defects

Bruno Zappacosta[1*], Malvina Hoxha[2]

[1] Department of Biomedical Sciences, Faculty of Medicine,
Catholic University Our Lady of Good Counsel, Tirana, Albania
[2] Department of the Chemical-Toxicological and Pharmacologic Evaluation of Drugs, Faculty of Pharmacy,
Catholic University Our Lady of Good Counsel, Tirana, Albania

Abstract

Background: Neural tube defects (NTDs) are important human birth defects with a prevalence of about 1/1000 pregnancies; some of them are incompatible with life, such as anencephaly. Spina bifida or meningocele, are responsible for childhood mortality and severe disabilities, without considering the significant effects on families, and on health care systems.

Aim: The aim of this study is to report the current state of knowledge on the role of folic acid in neural tube defects.

Methods: We conducted a review to report all the up-to-date knowledge on the role of folic acid in NTDs prevention.

Results: The etiology of NTDs is complex and multifactorial, however, the relevance of folic acid (FA) in the prevention of many NTDs has been universally accepted. FA supplementation (0.4-0.8 mg/daily) is greatly recommended for child-bearing age women, starting from the periconceptional period, considering that the critical period for the development of the embryonic nervous system is represented by the early weeks of pregnancy. Unfortunately, only a small percentage of women follow these recommendations and, for this reason, several nations have introduced a mandatory grain fortification policy to assure an optimal folate

Address for correspondence: Bruno Zappacosta*, Department of Biomedical Sciences, Faculty of Medicine, Catholic University Our Lady of Good Counsel,Tirana, Albania. Address: Rr. Dritan Hoxha, Tirana, Albania. Email: b.zappacosta@unizkm.al

status and, as a consequence, a significant NTDs prevention.

Conclusion: However, further studies are requested to identify potential health risks associated to higher circulating FA concentrations.

Keywords: Folic acid; Neural tube defects; Pregnancy; Prevention.