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Folate metabolism pathway in pregnancy and possible impact of *P. falciparum* malaria infection

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Abstract

Folate is a crucial nutrient for cellular growth that plays a key role in the interactions between nutrition, fetal programming, and epigenomics. Folate is involved in the synthesis of nucleic acids (DNA), DNA-cystosine methylation and therefore the normal development of the fetus. Maternal folate deficiency increases the risk of adverse pregnancy outcomes. For these reasons folate supplementation during pregnancy is part of prenatal care programs in most countries.

Although the relationship between early life events and adult diseases has been raised many years earlier, little are known about malaria infection induced by *Plasmodium falciparum* in pregnancy. Folate is needed for both malaria parasite growth and host erythrocyte production. *P. falciparum* has the ability to use host plasma folate as its primary folate source. Functional folate deficiency and increased plasma homocysteine levels during pregnancy of infected women in areas endemic for malaria is a probable scenario accentuating the impairment of placenta function leading to the occurrence of neural tube defects, low birth weights, and intrauterine growth retardation. We have examined the relationship between plasma folate and blood homocysteine concentrations from malaria affected patients as well as from experimentation studies. We examine the impairments of the folate metabolism pathway, as a result of *P. falciparum* malaria infection during pregnancy, including maternal moderate hyperhomocysteinemia, or observed epigenetic alteration.

Questions that may be answered on the alteration of folate metabolism pathway and possible impact of *P. falciparum* malaria infection in pregnancy are addressed and discussed.

Biography

Abalo Chango is an Associate Professor of Nutrigenomics and applied bioinformatics at the Institute Polytechnique LaSalle Beauvais France. He has completed his Ph.D. in 1993 from University Henri Poincaré in Nancy France, and postdoctoral studies at the Division of Medical Genetics, McGill University Montréal. He is the director of the department of Nutritional Sciences and Health at LaSalle, Beauvais. His main research is focused on the genomics approach of folate-mediated one-carbon metabolism. He has published more than 20 papers in reputed journals on the topic.