Metabolomics-2013
OMICS Group Conferences
Accelerating Scientific Discovery
2nd International Conference and Exhibition on
Metabolomics & Systems Biology
April 8-10, 2013 Hilton Chicago/Northbrook, USA

Maternal-fetal transport and disposition of some essential trace elements in diabetic pregnancies

Moorkath Nandakumaran
University of Kuwait, Kuwait

Abstract

Diabetes mellitus in pregnancy is well known to have grave implication for health of the mother as well as fetus and neonate. However, role of essential trace elements in pregnant diabetic women has remained largely un-explored. We have investigated the maternal-fetal transport kinetics disposition of essential trace elements like C, Zn, Fe, Mo, Se &Zn in placenta of pregnant insulin-dependent and non-insulin dependent diabetic women and assessed possible alterations, if any with respect to trace element status in control, uncomplicated pregnancies, in women at term. Similar studies have been done in pregnant experimentally induced diabetic rats in an attempt to assess the suitability of rat diabetic model for such studies. We have also studied maternal-fetal transport characteristics of the above trace elements in vitro, using perfusion of human placental lobules mimicking diabetic hyperglycemic states. Antipyrine, a widely used permeation marker in placental transport studies will be used as the internal standard in vitro studies. The possible relationship of maternal-fetal trace element transport kinetics with antioxidant status of the subjects concerned were also assessed, measuring activities of enzymes as glutathione peroxidase, superoxide dismutase and total anti-oxidant activity in both diabetic and control women and diabetic and control pregnant rats. Insulin-dependent diabetic pregnant women showed significantly higher C&Fe blood values compared to controls while the Type 2 pregnant women did not show this statistical difference in values of above elements. However, Se blood levels were significantly lower in Type 2 diabetic women at term compared to controls. Blood levels of essential trace elements studied in diabetic rats did not match with the findings in pregnant diabetic women and suitability of rat model for study of trace elements in human diabetes remains questionable and further detailed studies are warranted in this connection

Biography

Nandakumaran obtained his Doctorate Degree in Reproductive Physiology from University of Paris in 1979 and worked as post-doctoral research consultant for 4 years in Hospital St Vincent De Paul, Paris, France. He was visiting Faculty at New York medical Centre for a few weeks. Worked as Chairman of Obstetrics & Gynecology Department, Kuwait Medical faculty for over 4 years. Has published over 50 research papers in international journals relating to maternal-fetal exchange of nutrients and drugs in health and disease