Introduction

Human milk is a very complex living fluid, which comprises proteins, carbohydrates, lipids, cells and others biologically important components. These milk components interact synergistically with each other's and their environment **(Lopez, 2007).**

Breastfeeding not only affect the growth of infants but also their cognitive development. Human milk is rich in long chain polyunsaturated fatty acids.These compounds are important for brain development and myelination, breastfed infants usually have higher intelligence quotient(IQ) than formula fed ones**(Renolds, 2001).**

Preterm milk is uniquely suited to the growth requirements of preterm with the exception of calcium and phosphorus, preterm milk fits the requirements for preterm infants' growth **(Baum, 1980)**. Its advantages are in host defense, nutritional components and suitability for gut absorption, as well as its biological and developmental value (**Ruskin and Bader, 2003).**

The children's intellectual development is influenced by both genetic inheritance and environmental experiences. Breastfeeding is one of the earliest such postnatal experiences. Breastfed children attain higher IQ score than children not fed breast milk, presumably because of fatty acids uniquely available in breast. Studies have shown an association between IQ and the genetic variant in FADS2 gene involved in the genetic control of fatty acid pathway **(Caspi, 2007).**

There have been no studies to date as to whether FADS2 expression is influenced by the mode of early infant feeding based on the composition of breast milk. There is a need to study the mechanism whereby preterm breast milk affects brain development and whether this could be related to genetic inheritance. The role of genetics in brain development of preterm infants fed on human milk and those fed on artificial milk.