RESEARCH ARTICLE

FOOD SCIENCE RESEARCH JOURNAL;
Volume 2 Issue 2
(October, 2011) Page : 173-178

Received : July, 2011; Revised: August, 2011; Accepted : September, 2011

Effect of feeding quality protein maize (QPM) on growth of young children (1-3 years)

NEETA CHOPRA, AMITA BHARGAWA AND ANNAMMA KUMAR

ABSTRACT

Good quality proteins in the diets is one of the most important requirements for proper growth of young children. Maize is the main source of nutrition for millions of people in the developing countries. The conventional variety of maize is deficient in lysine and tryptophan. The cereal is also imbalanced in the leucine -isoleucine ratio. The genetically modified crop called Quality Protein Maize (QPM) is known to be nutritionally much superior. This study was undertaken to find out the effect of feeding QPM on growth of 1-3 year old children. Eighty children from a low socio-economic community in Ghaziabad, Uttar Pradesh, India were grouped into four, each group comprising 20 children. General profile, and anthropometric measurements were recorded, following which each group was fed a different diet *viz.,* QPM diet, conventional(normal) maize diet, milk diet and control (home) diet for a period of 180 days. All four were isoprotein and isocaloric diets. At intervals of fortnight, the anthropometric measurements were taken until the completion of feeding experiment. The QPM fed group performed best in all measurements *viz.,* weight, height, head circumference, chest circumference and arm circumference. Substitution of conventional maize with QPM is therefore recommended for combating protein malnutrition and poor growth, particularly among young children of low socio-economic groups subsisting on maize.

Chopra, Neeta, Bhargawa, Amita and Kumar, Annamma (2011). Effect of feeding quality protein maize (QPM) on growth of young children (1-3 years), *Food Sci. Res. J.,* **2** (2) : 173-178.

Key Words : Maize, Protein, QPM, Feeding, Growth, Children

INTRODUCTION

Protein energy malnutrition is an important nutritional problem in India. Animal protein is expensive. The main source of energy is cereal crops and by far is also the major source of proteins. Unfortunately, these have poor nutritional value for humans with respect to amount of amino acids that are required for human growth. Out of 22 amino acids commonly occurring in food proteins, eight are essential for human growth and these have to be provided by dietary proteins.

Cereal proteins contain on an average about 2 per cent lysine, which is less than half of the concentration recommended for human nutrition by the FAO (1985) .One such crop is maize with its high content of carbohydrate, along with traces of lipids, protein, vitamins and minerals. Maize serves as the main source of nutrition for the millions of people in developing countries, accounting approximately 15 to 56 per cent of the total daily calorie intake (Prasanna *et al.,* 2001). From the human nutrition point lysine is the most important limiting amino acid in the maize endosperm protein, followed by tryptophan (Bressani *et al.*, 1975).The deficiency of lysine and tryptophan and excess of leucine, *i.e.* imbalanced leucine isoleucine ratio causes pellagra which occurs in endemic form among population groups subsisting on maize.

The need to genetically ameliorate the poor nutritional value of cereal grain maize has been recognized for a long time. In 1960 a variety of maize called opaque-2 was discovered to have twice the normal levels of lysine equivalent to that of skimmed milk, but in field trials the new grain proved to have disappointed yield and storage qualities. This maize was revised in the mid nineties and Quality Protein Maize (QPM) was developed via conventional breeding methods. This new variety has high protein content, high yields and attractive storage qualities (McPherson, 2000).

The maize kernel includes pericarp (6%), endosperm rich in starch (82%) and germ (12%).Bulk of the protein in a mature maize kernel is in the endosperm and germ, but the germ protein is superior in both lysine and tryptophan. Graham *et al.*(1989) stated that to anyone familiar with the nutritional problems of weaned infants and small children in the developing countries ,and with