## S U M M A R Y

In Egypt most of the children foods mainly consisted of mixed cereals, which might be considered inadequate to supply the needed requirements of some essential nutrients recommended for children in this stage of growth.

The aim of this study was to formulate ready and easy to prepare protein-rich mixtures in powder form, from locally available and cheaper sources. As well as, cereals (wheat, corn and rice); legumes (broad bean, chickpea, dried peas and lentil); vegetable (carrot and potato) in addition to skim milk powder.

Ten mixtures were formulated, analyzed and evaluated by various methods.

The obtained results could be summarized as follows:-

1- The obtained data of the moisture content of the raw items showed that the vegetables (carrot and potato) had the highest values, 86.50 and 78.50%, respectively. While it ranged between 2.32 and 10.86% for skim milk powder, legumes group and cereals group.

The skim milk powder showed the highest value of protein content (36.29%), followed by peanut (28.88%), while

the sesame had the highest value of fat content (55.92%). Skim milk powder also showed the highest value of ash content. Meanwhile, the rice showed the highest value of total carbohydrate and available carbohydrate (84.12 and 83.42%, respectively), followed by corn, wheat and chickpea (74.05 & 72.05, 73.50 & 72.00 and 64.40 & 62.90% respectively). The sesame showed the highest value of fiber content (4.23%), followed by peanut and dried peas (3.55 and 3.35%, respectively).

2- The moisture content of the formulated children food mixtures ranged between 2.05 to 4.56%. The mixtures No. 6, 1 and 2 had the highest value of protein content (23.19, 22.97 and 22.95%, respectively). While, it ranged from 18.38 to 22.31% for the other mixtures. The fat content for all mixtures ranged between 3.17 to 4.95%. The ash content for all mixtures ranged between 1.66 and 2.98%. Meanwhile, the fiber content ranged between 1.22 and 2.00% for all mixtures. The highest value of both total carbohydrate and avialable carbohydrate were obtained for mixture No. 3.

3- The calculated calorific values of the formulated mixtures ranged between 385.93 and 396.48 K cal./100 g.

4- The mineral contents of the prepared mixtures, showed that, the mixture No. 2 had the highest value of calcium content (675.29 mg/100 g), it had also the highest value of phosphorus content 617.14 mg/100 g).

5- The fatty acid contents of the formulated mixture, showed that the mixture No. 2 had the highest value of oleic acid 70.025%, Meanwhile, mixture No. 8, had the highest value of linolic acid (43.033%).

6- All the formulated mixtures, had higher quantities of the essential amino acids as compared with fresh hen's egg protein except for methionine.

All the mixtures had also higher quantities of the non-essential amino acids than those of fresh hen's egg protein, except for serine in mixtures No. 8, 10, 9, 4 and 5, respectively.

7- The chemical scores of the formulated mixtures showed that in all mixtures, methionine might be considered as the most and first limiting amino acid. While the therionine was the second limiting amino acid in all mixtures except mixtures No. 7 and 9, in which valine was the second limiting amino acid.

8- The biological assay, indicated that, the highest weight gain was obtained from diet No. 2, while the lowest gain weight was in animals fed on diet No. 6. The highest value for feed efficiency (FE, 0.302) and protein efficiency ratio (PER, 3.02) were obtained from diet No. 8, while diet No. 6 had the lowest values. Diet No. 2 had the highest values of (NPR, 8.14%), net protein utilization (UPU, 73.94%) and digestibility coefficient (DC, 91.53%), while, the diets No. 2, 5 and 10 showed the best biological values (BV), (80.78, 80.69 and 78.55%), respectively.

9- The trypsin-inhibitor activity was higher in untreated legume seeds. Chickpea, had the highest content, followed by lentil, broad bean and dried peas. Trypsin-inhibitor activity (TIA) decreased in legume flour after different treatments compared with untreated legume seeds. All formulated mixtures had low value of TIA, it ranged between 0.24 and 0.72 TIU/mg sample.

10- Total bacterial count of the formulated mixtures was low, it ranged from $7.5x10^2$ to $9.6x10^2$/g.

11- The organoleptic tests of the prepared children food mixtures proved that mixture No. 2 was the most acceptable. The formulas No. (1, 3, 4, 5, 6, 8, 9 and 10

got nearly the same scores and were within the acceptable range. While the lowest scores were recorded for mixture No. 7.

Generally, the results indicated that mixture No. 2 had the better nutritive, biological values and organoleptically more acceptable than the other nine mixtures.

12- The costs of the formulated children food mixtures were found to be quite suitable for low and middle Socio-economic sectors. The price of 100 g of the formulated mixtures No. 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 were 33.50, 35.94, 34.70, 37.50, 40.94, 43.75, 33.38, 53.44, 51.56 and 43.15 P.T., respectively. While the price of the same amount of other baby food such as Cerelac, Gerber and Galactina were 187.50, 237.50 and 300.00 P.T., respectively.