

Comparative Studies of Some Local
Oil Seeds and Seed Cakes.

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INTRODUCTION
AND
AIM OF WORK

INTRODUCTION

The most important problem facing the world today is the rapidly expanding population and the insufficient increase in food supply. Undernutrition and malnutrition are prevalent among large parts of the world's population and are likely to become more extensive. Unless the population food imbalance can be changed markedly actual hunger will occur.

Proteins are among the components of diet that play an important role in the maintenance of good nutritional status. Good quality proteins are in short supply and unevenly distributed, hence the incidence of protein malnutrition is accordingly high in most developing countries.

The problem of protein needs is the most complex in the field of nutrition and its deficiency causes many diseases specially among children because of the growing body requirements.

Schaefer, A.E., (1963), has pointed out that in practically every developing country, over half the population dies before attaining the age of fifteen and in many areas half or more of the infants die before reaching the age of five, a direct result of combination of inadequate nutrition and widespread infectious diseases. Scrimshaw N.S. and Bender M. (1961) have made similar observation and reported that Kwashiorkor, a protein deficiency condition in infants and children, is common in Latin America, Africa and the Near and Far East. These workers have concluded that the mortality of children, one to four years of age, is the best indication of the seriousness of protein malnutrition. They also have pointed out that children suffering from protein malnutrition are more susceptible to infection than wellnourished children and that the sudden development of Kwashiorkor in these children is usually associated with the stress of infection.

It is understood now that the protein-calorie malnutrition in children can range from Kwashiorkor (protein deficiency and adequate caloric intake) to

marasmus (deficiency of both protein and calories).

A conclusion which was justified is that the deficiency in protein in most of the world today is primarily qualitative not quantitative. The only real exceptions are those countries, particularly Africa (Congo), in which a large percentage of the daily caloric intake is derived from low protein foods such as cassava and potatoes, (Howe et.al, ,1965).

The problem of malnutrition is vast, that there is no single and quick solution. In order to combat this socioeconomic disease, various ways and means have been indicated and adopted. One of them is to use low cost high protein foods and food mixtures as food supplements.

Egypt suffers from the same problems of other developing countries, most important of which is the problem of food consumption. Malnutrition is common in Egypt, as a result of which, iron deficiency anaemia, ariboflavinosis, protein-calorie deficiency, rickets and pellagra are found (Abdou, I.A., 1960).

Since the world production of animal proteins increases slowly and the cost remains high, attentions had been directed towards the re-evaluation of the different native sources of plant protein in an

attempts to improve the quality of the protein consumed.

Nine-tenths of all seeds cultivated are cereal grains which are considered the staple food of the world. Legume seeds are the second great group of seeds used as foods. All kinds of beans, peas and lentils are considered as a major protein supply since they contain from 25 to 40 percent protein. Some legumes, such as soybean and peanut, are high in oil and protein as the case in certain other oil seeds. (Senti, R.F. and MacLay, W.D., 1961).

Gheyasuddin, et al., in (1970) reported that, the increasing realization that oil seeds hold potential to bridge the protein gap in many countries of the world has stimulated a great deal of interest among food scientists, and food industries are busily engaged to exploit oil seed protein for human consumption.

Oil seeds, particularly sesame, cotton seeds, safflower seeds and sunflower seeds, are protein rich sources. They play a vital role in relieving protein malnutrition in many areas where animal products cannot be offered.

The press cake or meal which remains from commercial production of oil from sesame, cotton seed, peanuts, soybeans, sunflower, safflower and other oil rich seeds, is one of the most potentially useful sources of protein if could be used for human consumption. These products are now usually employed as fertilizers or as animal feeds.

About 63 million tons of oil seeds producing 20 million tons of protein are being cultivated in the world annually at the present time.

For oil seed meal proteins to be used for human consumption, the commercial production used should be of good quality, clean enough and free from harmful substances so that the product can meet the standards for human consumption.

When products are used as animal feed it requires four pounds or more of plant protein to produce one pound of animal protein.

In situation of need, this is inefficient use of protein and would be better and more economic to be utilized by feeding directly to man. These oil seed meals can be mixed with cereal grains to provide a protein mixture of higher biological quality

that can be adjusted to meet the protein needs of children. Actually the problem is one of making better use of an enormous and nutritionally valuable food resources which is at present largely wasted.

AIM OF WORK

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The present study was undertaken with the main object of determining and comparing the nutritive importance of some local oil seeds (except for rape seed which was imported as it is not available locally) and their cakes, specially their protein quality.

The present investigation covers four types of oil seeds:

1. Safflower seeds (Crotaphagus tinctorius variety Giza I.).
2. Sunflower seeds (Helianthus annus variety Giza I.).
3. Linseeds (Linum usitatissimum variety Giza 4.).
4. Rape seeds (Brassica napus Erglu, imported from Germany).

The work includes a general survey for the biochemical constituents of the seeds and their cakes. This was carried out by determining the percentage of moisture, protein, fat, ash, carbohydrate and fiber in the investigated seeds

Some minerals were estimated including calcium, phosphorus and iron.

The caloric value (Calories produced per 100 gm.) of the above seeds and seeds cakes was also calculated.

Protein quality of the different seed cakes was also determined biologically using different criteria as protein efficiency ratio, net protein ratio and net protein utilization.