

STUDIES ON COMPREHENSIVE UTILIZATION FOR SUNFLOWER - I: EXTRACTION OF SUNFLOWER SEED PROTEINS

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SUMMARY

The proteins in the degreased sunflower seed dreg meal were extracted by the methods of the salt-extraction, alkali-extraction and salt-alkali-extraction, respectively. The results showed that the salt-alkali-extraction was significantly better than other two methods. The quantity of the proteins and the extracting ratio of the protein to the raw material by the salt-alkali-extraction were as much as those obtained by the salt-extraction and then by the alkali-extraction.

BRIEF INTRODUCTION

Sunflower has become an important oil crop in some countries for present years. In China, particularly in the northeast part, its growing area and yield are on the increase.

Compared with other oil crops, the degreased sunflower seed dreg meal has higher protein content. And its necessary amino acid contents are higher than cereal's. Besides these, there is no poisoning substance in the degreased dreg. Therefore, this kind of protein can be used as food. These years, much work for developing the concentrated seed proteins has been doing in many laboratories. In this field, the sunflower seed proteins are more important and they will become a kind of concentrated seed protein food.

As early as 1970, Gheyasuddin et al. began to study how to extract the sunflower seed proteins. However, up to now, the buffer system containing neutral salt or the extracting system containing alkali has still been used for extracting the sunflower seed proteins. In present trial, besides these two systems to be used, the salt-alkali-extraction system was used and the results of the three extracting systems were compared each other.

MAIN RESULTS

In the trial, the proteins in the degreased sunflower seed dreg meal were first extracted with neutral salt solution and then extracted with alkali solution. For comparing the results of different extracting methods, the salt-alkali-extraction (salt solution and alkali solution to be used together) was also used to extract the proteins in the degreased sunflower seed dreg meal. By analyses, the results obtained by the three methods were shown in Table 1.

Table 1: Comparisons of the three methods for extracting the protein in the degreased sunflower seed dreg meal

Methods	Extracted proteins (g)	Extracting ratio (%)	280:260 (nm)	Colour of extracting solution
SALT	7.32	29.2	0.96	brown
ALKALI	4.79	19.1	0.86	green
SALT-ALKALI	11.80	47.1	0.85	brown

The quantity of the proteins extracted and extracting ratio of the protein to the raw material showed that the salt-alkali-extraction was significantly better than the salt-extraction or alkali-extraction and its results were almost equal to the results obtained by the salt-extraction and alkali-extraction successively. The salt extracting solution had the highest ratio of 280:260 nm and other two kinds of solution had the same ratio.