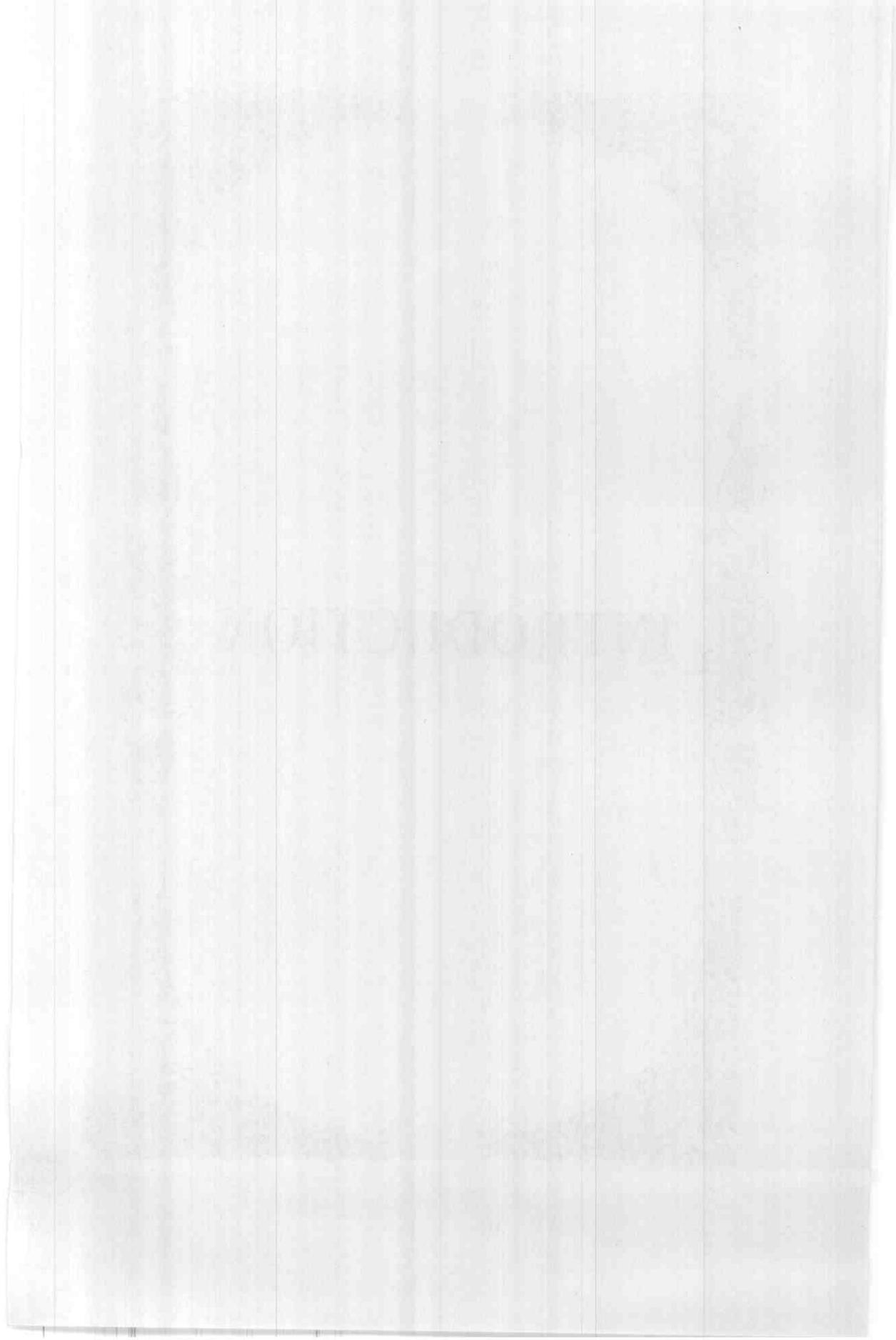


INTRODUCTION



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Refining process of vegetable oils results a large quantities of by-products. Utilization of these by-products reduce waste disposal problems at the same time, it can be used as a useful product in feeding and other industrial process.

Degumming is a major step in refining of edible oils. It is responsible for removing the undesirable ingredients occurring in natural fats and oils. Phospholipids present in crude oil can be easily removed during degumming process. Therefore, degumming has a main purpose removing, almost completely phosphatides or gums from the oil, on the other hand, gums may be valuable by-product.

The phospholipids during processing of soybean, sunflower and corn oil consisted mainly of lecithin. This by-product can be used in edible industrial purposes, in food uses, it can be used in candy, chocolate, ice cream, margarine and shortening and other industrial uses. It also work as antioxidant to improve oxidation stability of lipid products.

The second step of refining the oil is bleaching. This step aim to remove coloring matters and other impurities such as traces of metals, chlorophyll and oxidized compounds.

The last step of refining the edible oils is deodorization, it is responsible for removing the undesirable ingredients occurring in natural oils. This process is usually carried out by steam and under vacuum at suitable temperature. Deodorizer distillate

contains the volatile organic materials. This distillate contains tocopherols, sterols, hydrocarbons.

The main goal of this study is the utilization of the by-product from different steps of refining of soybean, sunflower and corn oil.

- Chemical composition of degumming by-product, bleaching by-product and deodorizer distillate of corn, soybean and sunflower were determined.
- Production of commercial lecithin powder from degumming by-product obtaining from soybean, sunflower and corn oil.
- Fractionation and identification of phospholipids from soybean lecithin powder, sunflower lecithin powder and corn lecithin powder were determined by TLC following by geometrical methods. Fractionation and identification of fatty acids of phospholipids of soybean lecithin powder, sunflower, lecithin powder and corn lecithin powder were identified by TLC and GLC. These determinations were followed by:

Evaluation of the soybean, sunflower and corn lecithin powder in autoxidation process.

Determination of hydrocarbons and sterols in unsaponifiable matter of corn, soybean and sunflower bleaching by-product.

Determination of fatty acids composition, total tocopherol, hydrocarbons and sterols in corn, soybean and sunflower deodorizer distillate.