TABLE II

Social and Economical Levels

Level	Considered as:	Population (%)	Acceptance (%)
A/B	High	5	72
C	Intermediate	38	64
D/E	Low	57	57

TABLE III

Comparative Analysis of Eight Competitive International and Local Brands of Dehydrated Instant Soups in Mexico

(1) Knorr-Suiza (Knorr–Switzerland)
(2) Maggi (Nestle–Switzerland)
(3) Rosa Blanca (General Foods–U.S.A.)
(4) Rico (Anderson Clayton–U.S.A.)
(5) Instant Ramen (Suntory–Japan)
(6) Mexican Local Brand
(7) Mexican Local Brand
(8) Mexican Local Brand

TABLE IV

Industrial-Type Soup Market Share (%)

Home-made	58
Dehydrated	35
Canned	12

TABLE V

Aspects Considered in Soup Analysis

(1) General soup consumption
(2) Traditional food habits
(3) Sales habits and shopping habits
(4) Specific brand preferences
(5) Specific needs of key consumers
(6) Marketing positioning of brands
(7) Product brand image
(8) Acceptance level
(9) Frequency of consumption

Mexico and results are shown in Table III. In most cases, only natural ingredients, hydrolyzed vegetable proteins, and/or natural or artificial MSG are used in their production.

Mexican consumers make a difference in the commercial food market between home-made soups and industrial-type soups. According to our estimates, home-made soups represent 85% of the consumption in the entire country. Nevertheless, the first type of food considered includes all type of soups prepared, not only starting from fresh, natural, raw ingredients (e.g., chicken, beef, vegetables, and others), but also those prepared starting from cubes, tablets, powder or granulated bouillon presentations, because in most cases, these are taken as the base for the soup, and consumers add fresh meat, chicken or fresh vegetables to obtain the final product.

The general results for the industrial-type soup market share are given in Table IV. Aspects considered in the analysis are listed in Table V.

This analysis of the situation in the industrial-type commercialized soup market has led us to conclude that there is a potentially very large volume for hydrolyzed vegetable proteins to be used in iron fortification food programs of nonstaple food items that contributes to alleviate, in some proportion, the nutritional problems caused by iron deficiency.

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Continuous Deodorization

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INTRODUCTION

The fundamental types of continuous deodorization are countercurrent, parallel countercurrent, horizontal flow with Mamuth pump steam–oil contact and horizontal trays, using a labyrinth based on Wecker invention.

Each of these designs is described with what we believe are main advantages according to several researchers (1-5, and S. Sourelis, personal communication).

COUNTERCURRENT DEODORIZATION

This equipment, by its natural simplicity, has a tendency to be more attractive in cost at first. Normally, it is designed to operate at a maximum 6 mm Hg, which we believe is more economical than 1 mm Hg since both oils give a product of equivalent odor and flavor when judged by a test panel evaluating oils deodorized at 6 mm Hg and 1 mm Hg. However, less blowing steam is used at 1 mm Hg, but a higher steam usage is required in steam operated ejectors. It is possible to lower temperature at 1 mm Hg, but this would affect flavor, odor and shelf-life of the product.

The contacting device is the bubble cap, which is readily available as it is standard equipment in the chemical and petroleum industries (6). The theoretical pressure drop is 1.8 mm Hg and acceptable hydraulic gradient is a diameter of 3.00 m in deodorization towers. We measured the pressure decrease per plate at the IGSA deodorizer, which is

6 plates high. For a production rate of 2,500 kilos/hr and 4–5% blowing steam, pressure decreased 6 mm Hg. That is 1 mm Hg per tray.

This deodorizer was modified to increase production to 4,000 kilos/hr, i.e., 78% above design value, with a pressure drop 1 mm Hg per tray.

According to Bates (2), the calculation of the number of theoretical plates needed to make an effective deodorization, is simple, using his formulas. He concluded that "you can lower the FFA content, but it is not so easy to obtain an acceptable flavor of deodorized oil."

PARALLEL COUNTERCURRENT DEODORIZATION

Since the blowing steam flows countercurrently, the total flow is divided in half at two points in the deodorizer, with the result that the ones before the last trays are at maximum vacuum in the top, which helps eliminate volatiles after the retention section. According to Gonzáles Flores (1), this design results in smaller diameter, and lower cost construction.

The distillation plates are the valve type, and have a low theoretical pressure drop: 2.2 mm Hg per tray.

This equipment probably has several other advantages not mentioned here; I have not operated this type of deodorizer, but most references indicate that it meets quality and production rate guarantees. The first of this type deodorizer used in Mexico was built by Blau-Knox Co. for Industries 1-2-3, S.A.

DEODORIZATION IN HORIZONTAL FLOW WITH MAMUTH PUMPS

This design has the advantage that blowing steam injected into each stage is fresh, and its action is very effective in stripping volatiles. This is a European design and normally it is built for 2–3 mm Hg absolute pressure; this balances the high level of oil in the tray (about 2 feet), which gives us an average pressure decrease of 20 mm Hg. European designs allow heat exchange between outgoing and incoming oil, which saves 50–70% heating fuel. References about this equipment are satisfactory regarding product flavor and quality.

DEODORIZATION USING WECKER INVENTION IN TRAYS WITH A LABYRINTH AND SAME ABSOLUTE PRESSURE ON EACH TRAY

This equipment has an interesting modification, i.e., the use of a multiporous steam sparger which produces many small bubbles, giving a high contact surface for a given volume. Volatile stripping is very effective. The Wecker design has been modernized recently, and we have not seen it in operation yet. However, the team of experts that designed it is very experienced, and this equipment should produce good results. However, Bates (2) and White (3) point out that, if steam bubbles are very small, entrainment losses can increase. No doubt this deodorizer design must have additional features to have individual characteristics.

Any of the deodorizers discussed can, with some changes, accomplish physical refining. One possibility is operation at 3 mm Hg with more distillation trays—normally two more, one with heating and the other without. This helps to increase temperature. Physical refining requires a different pretreatment than traditional refining plus strong bleaching, which can be preceded by acid treatment and even prefiltering.

After the correct pretreatment, which is different for each oil, oil goes to the modified deodorizer, which lowers free fatty acids, improves color, and removes peroxide, flavor and odor. This process is acceptable for coconut, tallow, palm and, probably with time, for other oils.

Our idea of the future continuous deodorizer would have heat economy, low steam and water consumption, low radiation losses, fatty acid recovery, bubble cap trays, parallel countercurrent flow for steam, and microporous steam sparger.

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Replacement of Egg and Milk with Soya Protein in Pasta

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ABSTRACT

The object of this paper was to investigate the replacement of egg and milk with soya protein in pasta—their chemical and biochemical changes, rheological effects, test of pasta quality and nutritive values.

INTRODUCTION

The need for vegetable protein, especially soya protein, to partially replace egg and milk in pasta production is becoming economically important.

In many parts of the world, particularly in undeveloped countries, imbalances in animal protein food are more and more prevalent. Today these foods are filling a greater proportion of the world's food requirements. Investigations of Yugoslav nutrition indicates that consumption of animal and vegetable protein is not well-balanced. The use of cereal proteins in the structure of food is over 51%—and that is very high.

In looking for a solution to these problems of protein malnutrition, we directed our investigation to how to replace expensive animal proteins in high-carbohydrate foods such as pasta and bread and without creating an imbalance in the essential amino acids.