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CHROMOTOGRAPHIC ANALYSIS OF HARMFUL SUBSTANCES IN COTTON OIL THAT RISK TO HUMAN LIFE

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ANNOTATION

This article analyzes the composition of oils and identifies harmful substances. One of the most common methods of food detection, the most common method today, is high-liquid chromatography. The generality of this method is that it can analyze the tracking of any food and other products. The only downside is that it can be standardized. The principle of operation of the method is that the product sample must be dissolved in the extract and placed in a liquid state. This method can also be used to determine the carbohydrates, proteins, fats, preservatives, vitamins and emulsifiers in food. Toxic substances in food can also be identified, mainly from the chromatographic analysis of cottonseed oil.

KEYWORDS: ***Ethanol, lactic acid, xanthophyll, lead, arsenic, cadmium, zinc, tin, hydration, alkaline refining, bleaching, deodorization.***

INTRODUCTION

The enterprises of the food industry are divided into two main groups according to the type of processed products:

1. Enterprises processing vegetable raw materials.
2. Enterprises processing animal raw materials.

Plant processing enterprises are subdivided into primary processing and secondary processing enterprises.

Primary processing enterprises include flour, granulated sugar, canned food, primary winemaking, primary production of alcohol, tobacco and tea leaves, and vegetable oil. Their raw materials are grains, fruits and melons, oilseeds, etc. Enterprises in the secondary processing of raw materials include bread, pasta, confectionery, white sugar, secondary winemaking, tea and cigarette making, oil processing (margarine, mayonnaise, soap). The raw materials of these enterprises are the products of primary processing enterprises: flour, granulated sugar, vegetable oil, wine materials, etc. The greater the variety of products in the food industry, the greater the variety of raw materials [1].

Therefore, they can be divided into groups according to their basic properties or chemical composition. For example, it can be divided into groups of dry plant raw materials and wet plant raw materials, or groups of carbohydrate raw materials, fatty raw materials, protein raw materials and essential oil raw materials. Any raw material is a biomaterial, the specific properties of which are determined by such parameters as chemical composition, elements of cell and tissue structure. The chemical composition of these raw materials includes proteins, carbohydrates, lipids, vitamins, enzymes and trace elements. The quality of raw materials belonging to each group is measured and determined by specific quantities. These quantities are divided into groups of quantities that reflect the physical, chemical, technological, organoleptic and other properties of the raw material [2]. In particular, grain quality indicators are divided into five groups: botanical and physiological indicators - plant type, variety, germination period and quantity, germination energy; organoleptic characteristics - color, taste, smell; physical parameters - shape and size, absolute and natural weight, etc .; mechanical parameters - modulus of tension, fragility, viscosity, etc .; chemical parameters - moisture, ash content, gluten content, acidity, etc .; technological parameters - special sizes that indicate whether the grain is suitable for the production of flour, bread or pasta. Fruit raw materials are divided into 4 groups according to the structure and formation of the plant stem: seeds (apples, pears, citrus), legumes (cherries, cherries, plums, apricots), soft fruits (grapes, currants, raspberries) and walnuts (almonds, walnuts, pistachios). Raw materials of melons are divided into

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2 groups: vegetative - using leaves, roots (cabbage, lettuce, radishes, onions, carrots, potatoes, beets, etc.) and fruits (squash, cucumbers, tomatoes, peas, etc.) [3].

Production based on mechanical and thermophysical processes covers many areas. Mixing, separation, separation, biting, crushing, pressure treatment, etc. from mechanical processes based on such technologies; from thermophysical processes include aeration, drying, boiling, roasting, and so on. These processes are common in the production of flour, pasta, confectionery, canning, oil and fat.

Chemical productions are based on chemical reactions. Such technologies are used in the hydrolysis of starch with inorganic and biocatalysts, in the production of glucose, in the hydrogenation or peerterification of fats, in the production of various solid fat products and soaps, in the production of ethylene, in the production of ethyl alcohol, etc. [4].

Each of the four groups of productions considered has its own basic processes, their concepts and laws. Below we will get acquainted with the basic concepts of the processes belonging to each group and describe the basic laws.

Microbiological and biochemical processes form the basis of fermentation technology in the first group of manufacturing enterprises. These processes take place using raw materials or enzymes secreted by microorganisms. It is known that enzymes are biocatalysts, their nature, types, distribution in nature, their properties are fully covered in the course "Biochemistry" [5]. Another force that drives biotechnological processes is yeasts. They are single-celled microorganisms, and detailed information about their structure, species, reproduction, etc. will be studied in detail in the course "Microbiology". As for the effect of microorganisms on raw materials in technological processes, the product is formed as a result of biochemical changes in the presence of enzymes synthesized and released as a result of their vital activity. Different microorganisms synthesize different enzymes. For example, in the production of alcohol, the amylase enzymes of mold fungi or malt (produced barley) are converted into starch mono and disaccharides (intermediate product) and then alcohol is formed from them by enzymes of special yeasts. In the production of beer, ethanol, polyhydric alcohols and other substances that determine the taste of beer are formed under the action of complex (various) amylolytic and proteinase enzymes and yeasts in malt.

Examples include winemaking, the production of acetone, the production of citric and lactic acids from dietary acids, and the fermentation of tea and tobacco [6].

GENERAL METHODS FOR THE DETERMINATION OF SUBSTANCES IN PRODUCTS.

Food products are understood. Products are also divided into types. Agricultural products, processed products, finished products, semi-finished products, etc. If we take the indicators of the composition of total products, their content depends on moisture, dry matter, acidity, etc. These are physicochemical parameters. Toxic substances are one of the most important criteria for determining the safety and hygiene of products. They contain 6 different elements: lead, arsenic, cadmium, zinc, tin, chromium and radionuclides, cesium and strontium. We know that the product is tested on two different indicators. First, the safety of the product is determined, which can be the basis for obtaining a hygienic certificate. Safety standards are based on regulatory documents established by the Ministry of Health. These indicators are: the amount of toxic elements, radionuclides, antibiotics, microbiological, indicators. These indicators have served as the basis for food inspections. The second is quality indicators.

These include: organoleptic characteristics (smell, taste, taste), physicochemical parameters, requirements for packaging, labeling, storage, delivery (transportation). Technical specifications, industry standards, technical instructions approved by Ozstandart Agency, GOST, ISO and other documents can be the basis for these indicators [7]. One of the most common methods of determining food yield is the highly liquid chromatography method, which is very common today. The generality of this method is that it can analyze the tracking of any food and other products. But one thing is for sure, it's one of the most delicate things you can do. The principle of operation of the method is that the product sample must be dissolved in the extract and placed in a liquid state. This method removes carbohydrates, proteins, fats, preservatives, vitamins, emulsifiers, etc. from food. can be identified. Toxic substances in food can also be detected, which is an advantage. For example, the toxic substance gossypol in cottonseed oil can be identified. For example, high-efficiency chromatography shown in Figure 1 below tested the content of gossypol in cottonseed oil produced in Uzbekistan.

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Figure - 1. High efficiency liquid chromatography, Shimadzu LC10

A standard solution is prepared for YUSSX. This method consists of taking 0.0200 g of gossypol in a 100 ml volumetric flask, adding 45 ml of acetonitrile and stirring for 15 minutes. Then another 45 ml of acetonitrile is added and the mixture is centrifuged before chromatography, where the centrifuge speed is 10,000 rpm for 5 minutes and filtered through 0.22 m pores (with a solution concentration of 0.02%).

To determine the percentage of gossiol in the sample, it is determined by comparing the surface of the standard and the surface of the chromatograms characteristic of the gossypol peak of the test substance [8, 9].

In the kernel of cotton seeds gossiol is 0.002-6.64%. The percentage was obtained in relation to the dry matter of the cotton seed. If gossypol was active in cottonseed oil, then cottonseed oil would be dangerous to consume. Due to the active presence of gossypol in cottonseed oil, it is also harmless to the human body when consumed.

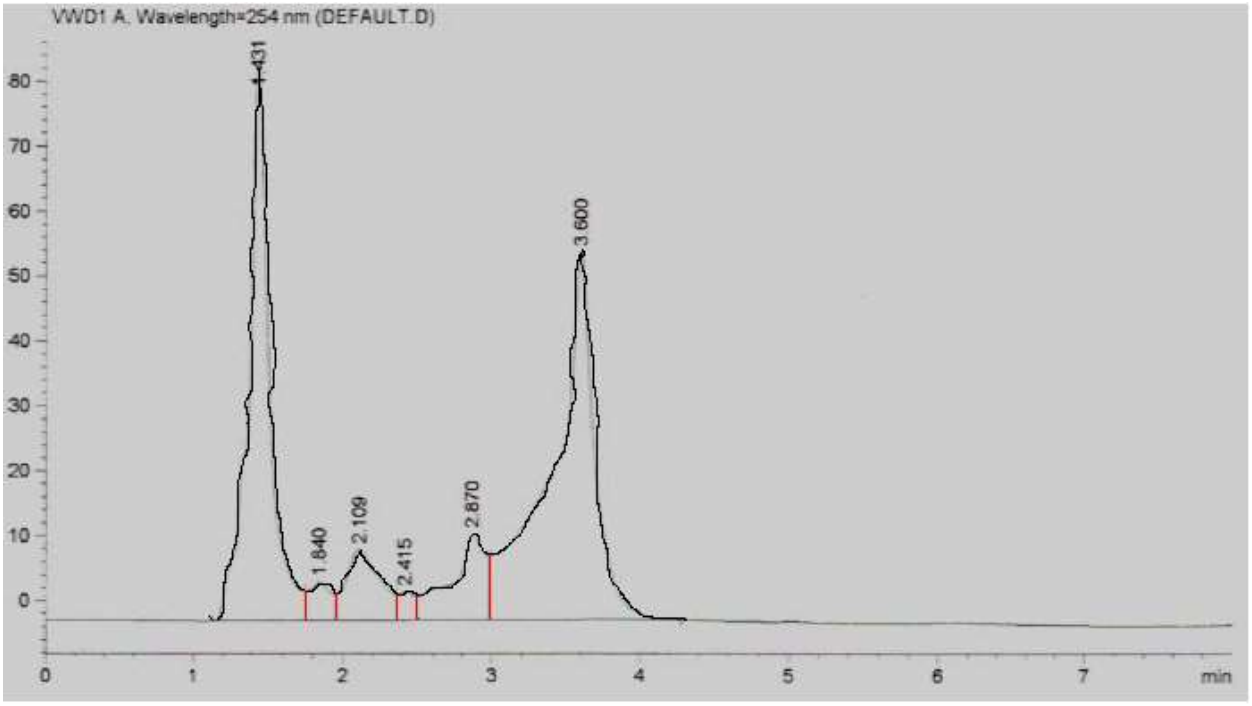

Figure-2. The high point of gossypol in unrefined cottonseed oil (expressed in 3-4 minute intervals).

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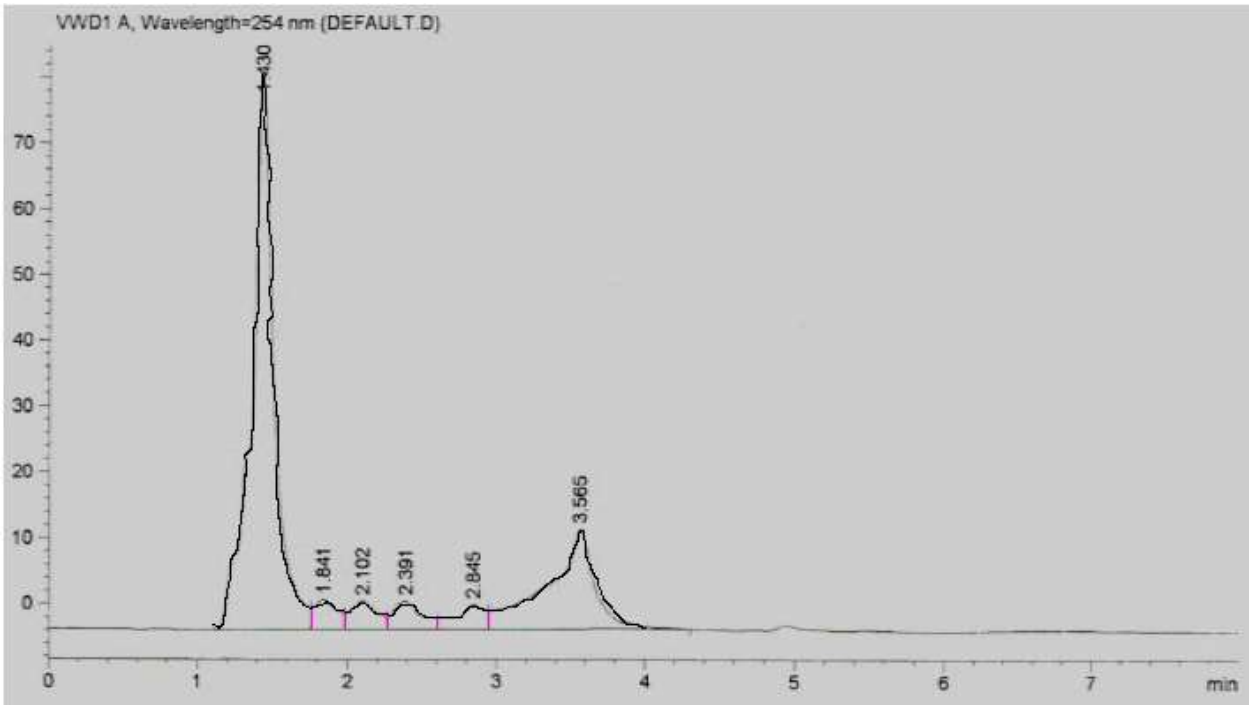

Figure-3. The high point of gossypol in refined cottonseed oil (expressed in 3-4 minute intervals).

It is one of the most common methods used today. In addition, the amount of vitamins, the amount of elements is determined by this. The amount of elements can be determined by the amount of more than 50 elements to date.

CONCLUSION

In conclusion, the article concludes that the depletion of natural resources and the moderate use of available natural raw materials is becoming one of the most pressing issues today. At the same time, the prevention of hazards by studying the micro-elements that affect the human body in modern laboratories remains the main task of science. The above chromatographic analysis is aimed at determining the toxic content of cottonseed oil and ensuring its suitability for consumption. The analysis showed that the oil content of gossypol is very harmful to the human body, ranging from 0.002 to 6.64%, and we managed to isolate it, the purpose of which is to improve the quality of cottonseed oil and improve export potential.

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