

## WALNUT (*JUGLANS REGIA L.*) HALVA

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### I. INTRODUCTION

Confectionery products enjoy a great demand from consumers and a rapid growth of sales values on national and international level. By their varied shape, flavor and color, these products create pleasant visual sensations, olfactory and tactile.

Confectionery products cause feelings of wellbeing and happiness [1, 2].

An Oriental Delight is halva. According to halva manufacturing technologies there are required three basic components: oilseeds, treacle toffee and a foaming agent, the total fat content in halva is 40% [3, 4, 6].

The principle of developed process for obtaining walnut halva consists of primary processing of walnut kernel by removing 25-35% of oil. Therefore it was obtained the oil cake with 30-40% fat, which then was used as a raw material in the halva manufacturing.

**The research purpose** – the improvement of manufacturing technology of walnut kernel halva (*Juglans Regia L.*).

### II. MATERIALS AND METHODS

For the development of manufacturing technology of the walnut kernel halva, it has been used walnut kernel (*Juglans Regia L.*) [7], which to comply with the recipe, was subjected to pressing to reduce the amount of fat to 40%, which was mixed with other ingredients [5].

Analysis of obtained halva samples were carried out in accordance with standards:

1. The lipid content, by Soxhlet method [9].
2. Ash content by standardized method [10].
3. Dry matter content by refractometry [11].

4. Microbiological indices by standardized method [12].

Developing the manufacturing technologies of walnut kernel halva is a major problem in scientific and practical terms.

First it is necessary to study the process of structure formation of halva product type and to examine the composition of the required components to form the final product.

For the manufacture of halva were used the following raw materials:

- Walnut kernels,
- Sugar
- Water.

### III. RESULTS AND DISCUSSIONS

In the paper it was examined the required report of the components to obtain elastic and fibrous texture, which are the basic features of confectionery type halva.

It was found that positive results may be obtained by combining the basic components in the following ratio: caramel 50 to 60%, walnut kernel 50 to 40%. Texture formation was possible by heat treatment of required compositions under the action of high temperatures of 80-90°C, the obtained mass turns from liquid in viscous condition.

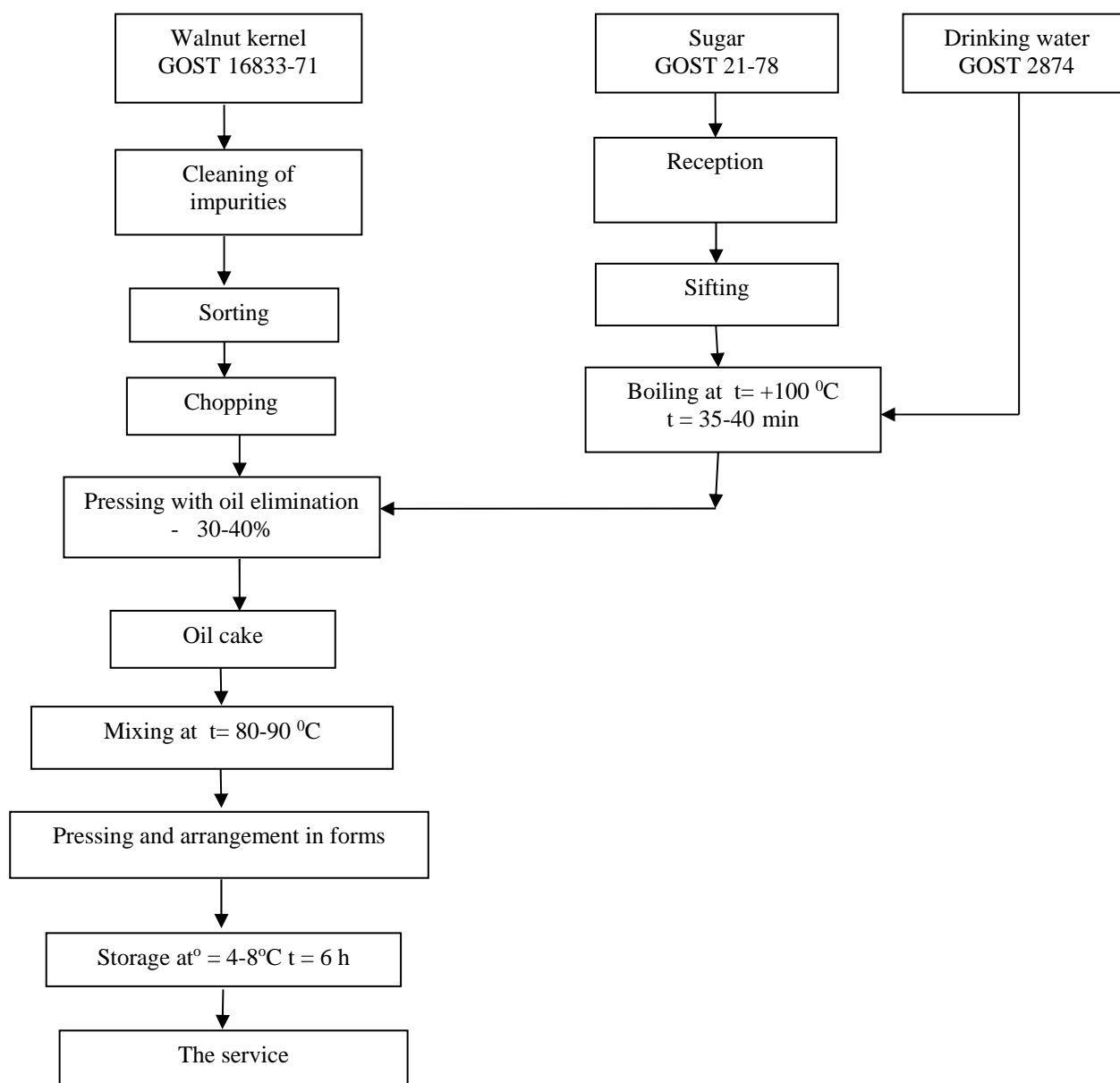
Following the physicochemical interaction between proteins, lipids and carbohydrates existing in components, viscous mass turns into a texture characteristic of products type halva. It should be reasoned that the formation of texture is obtained by continuous stirring at 80-90°C for 20-30 min.

After heat treatment, the obtained halva is pressed and packaged. The sensory properties and physicochemical characteristics obtained walnut halva are presented in table 1.

**Table 1.** Sensory properties and physicochemical characteristics of walnut kernel (*Juglans Regia L.*) halva.

Sensory properties	Properties of obtained halva		
	Sample 1	Sample 2	Sample. 3
<i>Sensory properties of walnut kernel halva</i>			
Consistency	Homogeneous	Homogeneous	Homogeneous
Color	Light brown	Light brown	Light brown
Taste and smell	Specific to	Specific to	Specific to walnut

	walnut kernel	walnut kernel	kernel
<b><i>The physico-chemical properties of walnut kernel halva</i></b>			
Humidity, %	4,0	3,9	3,8
Lipid content, %	15	15,75	16
Ash, %	1,8	1,76	1,9
Mesophilic aerobic and facultative anaerobic microorganisms, 1 g of product	not detected	not detected	not detected
Coliform bacteria 0.01 g of product	not detected	not detected	not detected
Fungi, 1 g of product	not detected	not detected	not detected



**Figure 1.** The flowchart of walnut (*Juglans Regia L.*) halva.

The obtained data were used to develop the technological scheme for walnut kernel (*Juglans regia L.*) halva which will be checked and materialized. Flowchart provides the use as raw material walnuts, sugar and drinking water which, according to the manufacturing technology are subjected to basic processes to form the product.

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## CONCLUSIONS

1. To obtain halva from walnut kernel is required to use raw materials containing 30-40% fats.

2. The basic process of halva obtaining presents texture formation and the product formation of halva type.

3. Following research was developed the process and the flow chart of halva manufacturing.

## References

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