

USE OF CHICKPEAS AQUAFABA IN THE TECHNOLOGY OF MANUFACTURING VEGETAL SPONGE CAKE

Mihail MAZUR^{1*}, ORCID ID: 0000-0001-5457-4913

Elisaveta SANDULACHI¹, ORCID ID: 0000-0003-3017-9008

Antoanela PATRAS², ORCID ID: 0000-0002-4054-4884

Aliona GHENDOV-MOSANU¹, ORCID ID: 0000-0001-5214-3562

¹Technical University of Moldova, 168 Stefan cel Mare Bd., Chisinau, Republic of Moldova

²“Ion Ionescu de la Brad” Iasi University of Life Sciences, 3 Mihail Sadoveanu Aleea, 700490, Iasi, Romania

Corresponding author: Mihail Mazur, mihail.mazur@saiem.utm.md

The aquafaba is a viscous liquid from canned resulting from the cooking of the beans. Usually, it is not consumed and presents food waste. This ingredient contains an important source of soluble protein. In the Republic of Moldova, essential quantities of leguminous products are grown, annually about 51 thousand tons. Local canning factories annually produce imposing quantities of canned chickpeas, beans, green peas, etc. Aquafaba constitutes about 40% of the total mass of a canned beans. This fact allows for the widespread use of aquafaba in the manufacture of plant food products. Replacing foaming agents of animal origin with those of plant origin, allows the food manufacture for consumers-vegetarians and vegans or can be consumed during the fasting period. The purpose of this study was to research the possibility of replacing eggs with cooking water of the chickpeas (aquafaba), as a foaming agent of plant origin, in the manufacture of vegetable sponge.

The aquafaba, from canned chickpeas from different manufacturers, was used for the research. Organoleptic indices and quality indicators of canned chickpeas were analyzed. The rheological properties of the foam obtained from aquafaba, and egg white were studied. It has been shown that the textural properties and stability of aquafaba foam depend on canning technology and chickpea varieties. The volume and stability of the foam was compared with those obtained with egg white. The influence of the beating time on the stability of the foam obtained from aquafaba and egg white was investigated. It was found that to obtain a stable foam from aquafaba, it is necessary to increase the beating time in relation to the foam obtained from egg white. The same trends were observed in the case of foaming capacity. To obtain the vegetal sponge cake, the technology and the classic manufacturing recipe were used, in which egg white was replaced with chickpeas aquafaba. From a sensory point of view, the vegetal sponge cake had a color and texture similar to the sponge cake prepared with egg white, but less elastic, with a pleasant taste and smell. Physico-chemical indicators and microbiological stability during storage were analyzed. The chromatic parameters were also analyzed to compare the samples of sponge cake of vegetable origin with that of animal origin.

Following the research, it was found that chickpeas aquafaba obtained from canned food can be used in the manufacture of pastries, being a potential solution for obtaining vegetable foods.

Keywords: chickpeas, aquafaba, vegetal sponge cake, quality.

Acknowledgments. This work was supported by Moldova State project 20.80009.5107.09 “Improvement of food quality and safety by biotechnology and food engineering”, running at Technical University of Moldova.