FUOYE Journal of Pure and Applied Sciences

Available online at www.fuoye.edu.ng

EFFECTS OF PROCESSING ON FUNCTIONAL PROPERTIES OF SOME MELON (EGUSI): *LAGENERIA SICERARIA* AND *CITRULLUS VULGARIS* SEED FLOURS

Ogundele J.O.[1*] and Taylor O.O.[2]
[1]Industrial Chemistry Department, Federal University Oye-Ekiti, Ekiti State, Nigeria.
[2]Chemical Sciences Department, Joseph Ayo-Babalola University, Ikeji-Arakeji, Osun State, Nigeria.

Received: 21 December 2015
Accepted: 22 May 2016

Keywords:
Processing, Melon (Egusi), Functional properties,*Lagenaria siceraria, Citrullus vulgaris* ***Corresponding author***:joan.ogundele@fuoye.edu.ng
or o.ogundele@yahoo.co.uk

Abstract

Functional properties are the intrinsic physico-chemical characteristics which may affect the behaviour of food system during processing and storage. Dried seeds of Lageneriasiceraria (African wine kettle) and Citrullus vulgaris were processed into boiled, roasted, germinated and fermented flour samples. Standard methods were used to determine the functional properties of the processed samples in order to determine the effects of these processing techniques on water absorption capacity (WAC) and oil absorption capacity (OAC), bulk density (BD) and foaming capacity (FC).WAC and OAC of raw Lageneria siceraria flour are 2.451±0.164 (g/g) and 6.417±0.369 (g/g) respectively. These values are higher than the WAC and OAC determined for raw Citrullus vulgaris. However, these values are generally reduced with processing for the two seed flour samples, except for the higher WAC value of germinated Citrullus vulgaris, OAC values of roasted and germinated Citrullus vulgaris as well as the higher WAC of fermented Lageneriasiceraria seed flours. Fermentation increased the FC of Lageneriasiceraria while roasting, boiling and germination reduced the FC of Lageneriasiceraria. However, the foaming stability (FS) of the raw samples of the two seeds are higher than FS of the processed seed flour samples after 2 hours [FJPAS 1(1) 2016].

1.0 Introduction

*Lagenariasiceraria*are gourd is grown in most parts of Nigeria. Gourd seeds (Cucurbitaceae) are versatile and include hundreds of species of vine bearing coiled climbing tendrils and some of the most unusual fruits in the world. Some *Lagenariasiceraria* gourds are grown in Yoruba land mostly for utility purposes [1, 2]. In West Africa, a region where soups are integral to life, egusi melon (*Citrulluslanatus*) seeds are a major soup ingredient and a common component of daily meals. Coarsely ground up, they thicken stews and contribute to widely enjoyed steam dumplings. Some are soaked, fermented, boiled and wrapped in leaves to form a favourite food seasoning. Egusi melon-seed meal is compacted into patties that served as a meat substitute. Despite being a significant foodstuff even by global standard, egusi melon is hardly known to nutritionists outside a few West African Nations. Little nutritional detail on egusi melon oil is readily available to an international readership. Research studies have shown that these seeds contained about 50% oil [3], 42-57% oil [4] and 44-53% oil [5] for seeds cultivated in different bioclimatic regions of Cameroon.

Functional properties are the intrinsic physico-chemical characteristics which may affect the behaviour of food system during processing and storage e.g. protein solubility, gelation, foamability and emulsion properties[6].The processing method of melon seeds before consumption include boiling, frying and roasting [7]. Ogundele and Oshodi [2] reported that the three varieties of *Lageneriasiceraria* seed flours reported on, have appreciable functional properties that are suitable for innovative application in the food industry. However, not much have been reported on the effect of processing on the functional properties of *Lageneriasiceraria*seeds (African wine kettle) and *Citrullus vulgaris*. This study is therefore to determine the effect of some processing techniques on some functional properties of some melon (egusi) seed flours: *Lageneriasiceraria* (African wine kettle) and *Citrullus vulgaris*.

2.0 MATERIALS AND METHODS

2.1 Samples and sample preparation

Seeds of *LagenariaSiceraria* (African wine kettle), were purchased from Ilora market in Oyo. *Citrullus vulgaris* were purchased from Akure market in