

# CHEMICAL AND PHYSICAL CHARACTERISTICS OF BLACK GARLIC

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Black garlic (*Allium sativum*) has a particular flavor and color that are synthesized during the ageing process. The harsh and irritating compounds are lost during their production and its unique flavor and black coloration are developed by biochemical and chemical reactions. Some of these substances have functional and beneficial properties to health, due to natural antimicrobial, anti-inflammatory, antithrombotic and anticancer activities, which are correlated to formation of phenolic compounds garlic and the presence of allicin. This work aimed to determine the composition of black garlic during the ageing process. Whole garlic bulbs were produced at cycled temperatures for 30 days according to Maldonado et al. (2012). Black garlic (BG) extracts were prepared by grinding 0.5 g of samples (from bulbs during the ageing process) in a mortar and pestle with 20 mL of methanol:water at 10:90 (v/v) at 25°C. After 5 minutes, samples were centrifuged at 7000xg and the supernatant was used to determine the total soluble solids (TSS), pH, titratable acidity, weight, firmness, total phenolic compounds (Folin-Ciocalteu) and activity of alliinase, according to AOAC methods. The data showed that the total phenolic contents were increased significantly during the ageing process from 67.3 to 602.0 mg GAE 100g<sup>-1</sup>, which mathematical model was adjusted by exponential equation. The pH decreased from 6.7 to 3.8, demonstrating that the process has been completed. TSS content enhanced from 22.9% to 47.30%, probably because of the substances produced by Maillard reaction. The coloration of BG produced after 30 days was represented by the color parameters determined (L, a\* and b\*), where b\* and L had a significant statistically reduction from 24.03 to 4.77 and 68.90 to 21.20, respectively. Firmness was measured successfully only at initial of process due to softness of texture samples developed in processed garlic.

Palavras-chave: total phenolic compounds; black garlic; ageing process