

Determination of Proximate and Mineral Composition of Three Traditional Spices

Onimawo I A

Abstract

Proximate and mineral compositions of three selected traditional spices (*Zingiber officinale*, garlic, and *Monodora myristica*) were evaluated during this study. Disease-free samples of garlic, ginger and African nutmeg were bought from an area market at Ekpoma in Southern Nigeria. The samples were peeled and were grinded to a desirable texture. Wet samples were analyzed for the proximate composition and mineral contents. As of the outcomes, dampness, residue, unpolished protein, fat, fiber and carbohydrate content of ginger were 72.20, 0.81, 8.91, 11.71, 1.38, and 2.01%, respectively; that of garlic were 59.90, 0.94, 12.41, 18.53%, individually, though African nutmeg had 8.14, 1.39, 13.57, 46.48, 27.39, and 3.06%, respectively. It had been also found that sodium, zinc, iron, and calcium were 7.32, 4.99, 9.68, and 182.67mg/100g, respectively in ginger, 9.41, 1.89, 8.47, 1016 mg/100 g in garlic. In African nutmeg, it had been found to be 110.20, 135.91, 147.28, and 166.10mg/100g, respectively.

Consequently, ginger, garlic and African nutmeg possessed varying proportions of the proximate components also as mineral elements. Though, African nutmeg controlled healthier dampness, residue, crude protein, crude fat and crude fiber contents with high sodium, zinc and iron mineral contents compared to other spices examined while garlic had a far better carbohydrate and calcium levels.

Zingiber officinalis Roscoe, commonly referred to as ginger belongs to family Zingiberaceae's cultivated commercially in India, China, South East Asia, West Indies, Mexico and other parts of the planet. It consumed worldwide as a spice and flavouring agent and is attributed to possess many medicinal properties (Ghosh., et al. 2011). Garlic (*Allium sativum*) is specie of the onion family and is employed as flavouring in cooking and pickling, sometimes within the sort of whole or grated cloves and sometimes within the sort of a cooked extract, as in sauces and dressing.

It's a characteristic pungent spice flavour that mellows and sweetens considerably with cooking. Locally, in Nigeria garlic is usually paired with ginger to form stews and soups. Generally, garlic is employed as supplement and on preparation of food, puddings, gravies, soups, stew, meat products, non-alcoholic beverage and soft candy. In medicine, garlic is employed as a digestive stimulant, diuretic and anti-spasmodic. *Monodora myristica* belongs to the Annonaceae family and is one among the foremost important trees of the evergreen forest of West Africa (Burubai., et al. 2007). It's native to Nigeria, where the seed is named *ehuruorehirorabolakoshe* among the Yorubas. Its seeds are a well-liked spice utilized in cooking to flavour and thicken dishes. Medicinally, the basis is chewed to alleviate toothaches and arthritis. It's also utilized in treatment of anaemia, haemorrhoids and sexual weakness (Erukainure, et al. 2012). This study will therefore contribute to the knowledge about the nutrient contents of those traditional spices.

Materials and Methods

Samples of traditional spices - garlic, ginger and African nutmeg were bought from an area market at Ekpoma, Esan West government area, Edo state, Nigeria. The samples were fresh, viable, and free from disease. The samples were identified and authenticated at the Department of Botany by a Plant taxonomist. After which, the samples were properly preserved at the Laboratory of the Department of Biochemistry, Ambrose Alli University, Ekpoma. The samples were peeled employing a laboratory knife and grinded employing a wooden mortar to urge a desirable texture. This was finished the three samples respectively. The grinded wet samples were further analysed for his or her proximate compositions at the Department of Animal Production and Health Nutrition Laboratory, Federal University of Technology, Akure.

Proximate chemical composition-Proximate composition decided by standard procedures. Determination of mineral content of sample Mineral content of the various traditional spice samples was assessed following the tactic of Pearson., et al. (1981). About 1.5g of the sample was ignited during a Muffle furnace for six hours at 550°C and therefore the resulting ash was cooled during a desiccator after which, 0.1M HCl solution was added to interrupt up the ash. it had been then filtered through acid and washed with Whatman paper No. 1 into 100ml volumetric flask, and diluted to 100ml with water . Results Ash represents the mineral matter left after feeds are burnt in oxygen. it's used as a measure of the mineral content in any sample. African nutmeg was found to possess highest ash content (1.39%) compared thereto of ginger and garlic. this suggests that African nutmeg have good mineral content, and thus is a viable tool for nutritional evaluation.

However, the worth for the ash content in African nutmeg is less than the 4.52% reported by Enwereuzoh., et al. Okwu had earlier posited that such differences may arise from variations in soil micronutrients and it could even be partly attributed to the tactic of analyses. the answer was analysed for a few metals with different hollow cathode lamps for calcium (Ca), iron (Fe), and zinc (Zn) using an atomic absorption spectrophotometer (Jenway, FPSP 210) while sodium (Na) content decided employing a Flame Photometer (Jenway, PFP7).

Statistical analysis of data- the info obtained during this study were subjected to one-way analysis of variance (ANOVA) analysis with Tukey HSD post hoc ergo propter hoc test using IBM SPSS statistical software (version 23). Results were recorded as mean \pm standard determination of two-repeated determinations. For statistical comparison, results are presented to be statistically significant when p values are but 0.05 ($p < 0.05$).

Moisture content of any food is an index of its water activity and is employed as a measure of stability and susceptibility to microbial contamination. Ginger and garlic however possessed highest moisture contents than other components. Therefore, the low moisture content in African nutmeg compared to other traditional spices is indicative of the very fact that it are often stored for an extended time without deterioration in

quality or microbial spoilage since microbial activity could also be reduced to a minimum.

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