عنوان مقاله:

Compositions Nutrient and Antinutrients of Biscuits Prepared from Fermented and Unfermented Ternary Mixture Flours

محل انتشار:

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خلاصه مقاله:

Background: The exorbitant cost of wheat-based foods in non-wheat growing countries has necessitated looking for more enriched and sustainable alternative flour from botanicals that can be mixed and used to produce baked products including biscuits. The study aimed to make biscuits using three different fermented and unfermented mixtures of flour (sweet potato, pigeon pea, and yellow maize). Methods: Starch-rich tubers of yellow-fleshed cultivar of sweet potato (Ipomoea batatas), yellow maize (Zea mays) grains, and pigeon peas (Cajanus cajan) seeds were purchased from food merchants in the Uchi market, located in Auchi area of Edo State, southern Nigeria in June ۲۰۲۲. These botanical samples were taxonomically validated. The samples were divided into two parts fermented and unfermented, prepared and produced into flour forms. The blended raw materials into flour were mixed in order of sweet potato: pigeon pea: maize (composite mix two ۶۰.۰۰:۲۵.۴۷:۱۴.۵۳, composite mix five ۶۷.۷۰:۲۰.۰۰:۱۲.۳۱ and composite mix eight ۶۱.۷۲:۲۵.۲۴:۱۳.۰۴) were selected to produce biscuits while ۱۰۰% wheat was used as control. Biscuits were produced from the flour using a standard recipe. The obtained results were presented in mean±SD format of interpretations. Analytical significance dissimilarity between the means samples were considered based on one-way analysis of variance (ANOVA) using IBM Statistical software. Results: It revealed that fermentation increased techno-functional properties containing crude fiber (۳.۴۶۴±۰.۰۱-۳.۴۸۵±۰.۰۱) and ashes (۳.۶۸۸±۰.۱۱-۳.۷۱۱±۰.۱۱), while reducing fat (۱۷.۳۳۹±۰.۰۳) and moisture contents (۳.۶۳۹±۰.۰۵), the control had the highest protein (۱۲.۸۰۵±۰.۲۵) and lowest carbohydrate (۵۵.۶۲۲±۰.۱۲). The fermented biscuits had more flavonoids (۲۳.۱۶۲±۰.۳۶-۲۳.۸۵۲±۰.۶۰), saponins (۱۴.۷۹۳±۰.۰۷-۲۳.۴۹۵±۰.۰۳). Additionally, fermentation enhanced the potassium bioavailability of the products (۱۹.۸۰۳±۰.۰۰-۲۵.۲۶۴±۰.۰۵). There was high free radical scavenging activity and color for all the fermented samples than unfermented and controlled biscuits. Conclusion: According to the research, ternary flour mixes from the botanicals could lead to products with improved nutritional composition, functional properties, and antioxidant attributes to further improve biscuit quality. DOI: ۱۰.۱۸۵۰۲/jfqhc.۱۱.۱.۱۴۹۹۲

کلمات کلیدی:

Flour, Fermentation, Triticum, Zea mays, Nigeria