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Title: Development and Evaluation of Functional Cookies with incorporation of Banana Peel Powder rich in Phytosterol

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Abstract:

Introduction: Around 35% weight of the fruit is occupied by the Banana peel and, approximately 36 million tonnes of it are generated per year, and it has been observed that about 33% urban and 25% rural Indians are hypertensive. Hence Banana peel was used to develop a new food product and its physical properties and proximate analysis and antioxidant property was performed. The aim of the study was to quantify the phytosterol and develop cookies from the Unripe-Banana Peel and assess the quality characteristic of Banana Peel powder and the cookies. The methodology for the same was that *Dwarf cavendish* banana peel was dehydrated in hot air oven and powder were formed from it. GC-MS Analysis was performed on the unripe banana peel powder to identify the phytosterol and the powder was used to incorporate to form cookies. The physical properties of both the powder (of ripen, semi-ripen and unripen Peel) and cookies were studied. The proximate analysis was performed, along with the estimation of Potassium. The nutritional properties- Antioxidant property by DPPH assay of the cookies were analyzed. The data collected was analyzed by SPSS method. The results revealed that the mean score for water absorption of the ripen banana peel powder, semi-ripen and for un-ripen banana peel powder was (4.1 ± 0.10) , (4.57 ± 0.05) and (2.07 ± 0.05) respectively, swelling index mean score was observed to be highest in the ripen banana peel powder (6.13 ± 0.06) and the bulk density of the ripen banana peel powder, semi-

ripen banana peel powder and unripen banana peel powder was (0.46 ± 0.00) , (0.51 ± 0.01) and (0.50 ± 0.00) respectively. Banana peel possess different phytosterols like β -Sitosterol, campesterol, stigmasterol, cycloeucaenol, 24-methylene cycloartenol, and cycloartenol. The sensory evaluation selected the V2 as the best accepted formulated cookies with 20g of Banana peel incorporated in it. The physical Properties showed that the diameter of the control T0(38 ± 1.00) and variant V2(39 ± 1.00), thickness of T0(5.83 ± 0.75) and V2(7.26 ± 1.15) and spread ratio T0(6.55 ± 1.00) and V2(5.42 ± 1.00). It can be observed that the spread ratio of T0(6.55 ± 1.00) and V2(5.42 ± 1.00) and thickness was negatively correlated (-0.975). The proximate analysis showed that peel have moisture, protein, fat, crude fibre, total carbohydrate and energy content as 11g, 3.24g, 42.5g, 20g, 36.6g and 542.15kcal respectively and potassium with 52600mg being the most abundant mineral. Anti-oxidant analysis showed that V2 have IC Value 49.8 and have high anti-oxidant capacity in it. Hence, it can be concluded that as there is high content of phytosterol is present in unripe banana peel, and the optimal daily dose which can be considered to help in lowering the LDL levels are 2g to 3g of either phytosterol or phytostanols, a functional food product with incorporation of Banana peel will help to reduce the LDL cholesterol levels in a person, and high level of Potassium will also enhance the anti-hypertensive property of the cookies and avoid the elevation or chances of other related comorbidities. The formulated cookies can be consumed by people who have other co-morbidities as it is high in dietary fibre and complex carbohydrates.

Biography:

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