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Impact of hydrocolloid (mucilage) edible coatings on the oxidative stability and textural characteristics of deep fat fried potato crisps

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The effects of edible coatings from *A. esculentus* and carrageenan mucilage extracts individually or in combination on deep fat fried potato chips (3 cm X 1.5 mm) during storage at 25°C & relative humidity 55% (8 weeks) is studied. Peroxide value (PV), p-anisidine value and TOTOX (total oxidation products) of chips coated with 1% *A. esculentus* and 1% *A. esculentus*:carrageenan polysaccharide was determined by titrimetric method to analyze the extent of oxidation in comparison with control chips without any coating treatment. The proximate composition of coated potato chips were performed in which a reduction in terms of fiber, ash, reducing sugars contents with a corresponding increase in protein content compared to the uncoated control chips was observed. The potato chips coated with 1% *A. esculentus* and 1% *A. esculentus:*carrageenan mucilage polysaccharide coating showed lower peroxide values (1.04±0.06 and 1.03±0.02) and anisidine values (2.58±0.04 and 2.53±0.06) than the control chips (3.27±0.06 to 2.28±0.02) and (9.74±0.04) during storage. From the above results, the total oxidation stability of the fried product, TOTOX was measured and oxidative stability of chips coated with 1% *A. esculentus* and 1% *A. esculentus:*carrageenan polysaccharide edible coating were higher compared to the control chips without any coating treatment. The texture of the potato chips evaluated by using a TA.XT Plus Texture Analyzer (Texture Technologies, Scarsdale, NY) indicated that the firmness of potato chips coated with 1% *A. esculentus* and 1% *A. esculentus:*carrageenan polysaccharide was higher compared to control. The edible coating from 1% *A. esculentus* and 1% A. esculentus:carrageenan mucilage polysaccharide inhibited the oxidation of potato chips thereby enhancing their shelf life with appreciable sensorial scores and maintained nutrient quality of the potato chips representing a healthier snack for consumers.

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Preparation, characterization and antifungal properties of polysaccharide-polysaccharide and polysaccharide-protein films

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The effect of the interaction polysaccharide-polysaccharide (P-P) and polysaccharide-protein (P-Pr) blends on thermal and mechanical properties in films as biodegradable alternative of materials for food packaging was studied. Essential oils (cloves and cinnamon) emulsified were successfully incorporated into the films and evaluated as antifungal agents. Films were prepared using the film casting method. The morphological analysis showed that P-Pr films display a fractured rough surface without pores or globular formations and P-P films exhibiting continuous phases and absence of cracks. FTIR spectra evidence interactions between polysaccharides and polysaccharides-protein. Initial degradation temperature ($T_{5\%}$) decreases in two kinds of films with the addition of antifungal agents. P-Pr films showed higher maximum decomposition temperature (T_{max}) regarding P-P films. The incorporation of carrageenan in films enhances the tensile strength and elongation at break. Higher antifungal activity against *Botrytis cinerea* and *Rhizopus stolonifer* was revealed in the films containing cinnamon oil.

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