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Commentary

Mechanical Properties of Protein-based Food Bundling Materials

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DESCRIPTION

Food quality and safety are highly dependent on the physicochemical properties of the food packaging material. Protein-based biopolymers are increasingly being used for the production of palatable films and covers due to their film-forming properties. Various studies have prepared palatable protein-based films with convincing mechanical and boundary properties. Mechanical properties of protein-based food packaging materials are improved by integrating different parts of film manufacturing, such as plasticizers, surfactants, cross linkers, and various bioactive mixtures, including antibacterial agents and cell-enhancing compounds can. This review article presents recent updates and perspectives on mechanical properties such as stiffness (TS), elongation at break (EAB), and juvenile modulus (YM) of edible films in the light of various plant and biological proteins. Edible films made of ordinary polymers such as sugars, lipids and proteins are suitable for human consumption and do not constitute happy gambling. Edible films have excellent mechanical and boundary properties to replace plastic-based bundling materials at modern levels must be the mechanical and marginal qualities of a palatable film are of great importance, as they directly or indirectly affect food significantly. Stiffness (TS), elongation at break (EAB), and young's modulus (YM) are the three most important limits to consider when investigating the mechanical properties of films. The mechanical properties of delicious films depend on various factors such as polymer ideas, preparation strategies, and film synthesis. In addition, mechanical properties affect various limitations of films such as crystallinity, interference properties, and heat resistance. Proteins are preferred over lipids and starches to achieve the desired film properties for a palatable film. Protein-assisted, tertiary and quaternary designs can be easily tailored to achieve superior film properties using various agents such as heat denaturation, compound hydrolysis, enzymatic treatment, and synthetic cross-linking. Various types of protein polymers from plants (soy protein, zein, wheat gluten) and animals (gelatin, casein, whey protein) have been used to form palatable films. Studies have shown that, unlike sugars and lipids, palatable protein-based films are the most attractive and impart mechanical robustness. Proteins have specific designs with the potential for other useful properties, especially high intermolecular confinement, and thus have more established mechanical properties than starches and lipids. Evaluation of mechanical properties is fundamental to food bundling, as it provides an adequate level of safety while allowing food distribution without possible accidents during transport and volume. The way a material responds to stress applied to its surface is related to the mechanical properties of the bundling foil. The binding material should be an area of strength that can be stretched and stretched precisely enough to withstand assembly and shopper loads. Stiffness (TS), young's modulus (EM), Elongation at Break (EAB), and initial energy (Ea.) are some of the specific mechanical properties essential for the practicality of taste bundle films. These limits are evaluated to properly investigate the mechanical limits of consumable bundle foils. Protein palatable films and coatings have an extraordinary commitment to improving food quality, shelf life, utility and health.

CONCLUSION

The properties of proteins, plasticizers, and various synthetic compounds added for various purposes, such as cross linkers, antibacterial agents, and cancer preventives, as well as film formation strategies and treatment conditions, greatly affect the viability and properties of protein films. In addition, the mechanical properties of a palatable film are important for its presentation as a binding material, as it determines its strength, conformability, and ability to protect food. Furthermore, the study aims to analyze and improve the mechanical properties of protein-based food packaging materials for modern applications.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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