Journal of Bioremediation & Biodegradation

ISSN: 2155-6199

Manya, J bioremediat biodegrad 2023, 14:4

Perspective Open Access

Study of Non-Traditional Starches for Biodegradable Films with a Focus on Description and Current Uses in Packaged Foods

Abhi Manya*

Department of Agri-food Industry, University of Science and Technology (UST), Daejeon, Republic of Korea

Abstract

The rising consumption and inappropriate discharge of non-biodegradable plastics is increasingly alarming. The demand for biodegradable polymers has increased and starch films have become a popular option because of their availability and affordable price. Research on non-traditional starch sources has the potential to reveal unique features and substitutes for the agricultural resources now used to make bioplastics. The development and use of unconventional starch sources in films made by casting for food packaging applications has made recent strides, which are discussed in this paper. The main conclusions of applied food studies are covered, together with information on mechanical and structural qualities, moisture sensitivity and other factors. The findings show that starch films made from unconventional sources can reach comparable and even better, characteristics than traditional ones. Starch upcoming developments include research into new sources of starch, with a focus on enhanced characteristics, commercial scale-up and food uses.

Keywords: FT-IR; Mechanical properties; Permeability; Shelf life; Solvent casting

Introduction

Materials used in packaging are essential for maintaining food quality and safety throughout storage. The vast majority of commercially produced packaging across the world is made of materials and plastics derived from petroleum. The latter have favourable characteristics such acceptable water and vapour barrier properties, transparency and low cost, in addition to having good processing properties. Yet, because it is challenging to recycle synthetic packaging, the usage of such materials has an adverse impact on the environment, contributing to CO_2 emissions and long term accumulation. The European bioplastics organisation estimates that only 1% of the 368 million tonnes of plastic manufactured annually around the world are made from bioplastics, of which 18.7% are made from polymers derived from starch and used primarily in flexible packaging and consumer goods. By 2025, the output of bioplastics is anticipated to increase by 36% globally. Nevertheless, research on the main, traditional feedstock sources of starch may be replaced thanks to the technological potential of alternate sources of starch. Consumer concerns about the disposal of plastic in the environment have increased industrial interest in biodegradable films.

Discussion

There are many opportunities for film technology solutions in the food business thanks to the capacity to control critical food deterioration variables including oxygen, water and carbon dioxide, as well as the potential to combine antibacterial and functional biomolecules. Films made of lipids; proteins, polysaccharides and starch are biodegradable and edible. Due to its ideal film forming properties, neutral organoleptic features, low cost and abundance, starch is frequently employed. Vargas, Biodegradable movies through a process in which the polymer chains are disassembled into smaller pieces of monomers or dimers, which results in disintegration, are bioassimilated or mineralized in the environment. The possibility of unconventional starch sources for the creation of starch based biodegradable films has been researched. Some of these studies have concentrated on topics including the search for novel qualities, the recycling of vegetable waste and the sustainable and technical application of underutilized vegetable species as a way to increase the diversification of agricultural resources. In contrast to the conventional starches that are widely produced globally, innovative botanical sources are typically used as a staple food by local populations and indigenous cultures in the rural parts of emerging countries where the diet is rich in vegetables and family farm production is popular. Consequently, the purpose of this work was to give a review of recent literature on the use of unconventional starches for the synthesis of innovative biodegradable films using primary lab scale technologies. The characterization of starch film qualities, including mechanical tensile strength and elongation at break, water sensitivity solubility and water vapour permeability, as well as their use in food packaging, are also a major emphasis of this paper. Starch is a storage polysaccharide vegetables has this substance in their leaf and storage tissues. It is primarily stored in the amyloplasts of the endosperm of cereal grains, though tuber roots also contain it. Various sources of starch and phases of development will result in different granule forms, sizes and compositions.

***Corresponding author:** Abhi Manya, Department of Agri-food Industry, University of Science and Technology (UST), Daejeon, Republic of Korea, E-mail: Abhimanya343@gmail.com

Received: 15-March-2023, Manuscript No. JBRBD-23-91831; **Editor assigned:** 17-March-2023, PreQC No. JBRBD-23-91831 (PQ); **Reviewed:** 31-March-2023, QC No. JBRBD-23-91831; **Revised:** 25-May-2023, Manuscript No. JBRBD-23-91831 (R); **Published:** 01-June-2023, DOI: 10.4172/2155-6199.1000581

Citation: Manya A (2023) Study of Non-Traditional Starches for Biodegradable Films with a Focus on Description and Current Uses in Packaged Foods. J Bioremediat Biodegrad. 14: 581.

Conclusion

There are still unanswered issues about the structure of amylopectin and why even little structural changes can have a significant impact on starch characteristics, despite the fact that descriptions of amylopectin and amylose structures in studies frequently resemble one another. Starch film forming capabilities are difficult to anticipate by only taking into account the starch's composition due to these uncertainties in the field of starch research.