

Preparation and characterization of Alginate/Gelatin blend films for application as orally disintegrating films (ODFs) for drug administration

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ABSTRACT

Orally disintegrating films (ODFs) represent an alternative and advantageous way of administering drugs and other active compounds compared to conventional methods. ODFs may overcome limitations when there is no patient collaboration, especially for pediatric, geriatric, dysphagic patients, and even animals. They are thin polymeric films that can be applied in the mouth, where they will adhere to the oral mucosa and quickly disintegrate, releasing the active compound and enabling the oral absorption, with no need of water ingestion. The use of natural polymers has presented advantages over synthetic ones for biomedical and pharmaceutical applications such as ODF, since they are biocompatible, biodegradable, and may present hydrophilicity, film-forming ability and mucoadhesiveness. In addition, natural polymers can be combined as blends to form materials with better properties than biopolymers alone. Natural polymers usually used for this application are starch, maltodextrins, gelatin, alginate, chitosan, pectin, among others. In this work, we are studying alginate:gelatin blend films at several proportions aiming to develop materials with suitable properties for application as ODFs for drug administration. The films were characterized by thickness, colorimetry, SEM, FTIR, contact angle, surface pH, moisture uptake, mechanical properties, mucoadhesiveness, and disintegration time. All the blends presented a homogeneous structure, with no phase separation. The results obtained show that the films containing a higher proportion of alginate had greater hydrophilicity and moisture uptake, and shorter disintegration time compared to films with higher gelatin content. The development of this type of material presents an innovative

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character, from the technological point of view, as well as from the point of view of application, representing an alternative way of drug administration. The developed matrix may be applied to the development of ODFs for use in patients with swallowing difficulties, the elderly, children, and animals, as well as the administration of other types of drugs, such as antibiotics and anti-inflammatory drugs.