PREPARATION AND INVESTIGATION OF MULTI-LAYERED ORALLY DISINTEGRATING FILMS

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Oral administration of pharmaceuticals is the most preferred drug delivery method amongst patients due to its ease of administration, non-invasiveness and acceptability [1]. Orally disintegrating films (ODFs) are polymer-based, thin, flexible and pharmacologically active films, which applied to the oral mucosa begin to disintegrate/dissolve and release active components [2]. Oral diseases often require local and prolonged treatment and ODF could be considered as the best drug delivery system. ODFs can be formulated as a single- or multi-layered films, allowing controlled release of active substances. ODFs are typically obtained by solvent casting method, where casting liquid contains film forming material, solvent, plasticizer, anti-adherent, sweetener, color and flavor additives. Bio-based polymers or biodegradable polymers are gaining interest as good film forming materials for ODFs formation, due to their hydrophilic nature and non-toxicity.

The aim of present study was to obtain two- and three-layer films using bio-based or biodegradable polymers as film formers for possible application for ODFs and to evaluate their mechanical and physicochemical properties.

Three two-layer films and one three-layer film were obtained using poly(vinyl alcohol), 2-hydroxyethyl cellulose, methyl cellulose, chitosan, cellulose diacetate, hydroxypropyl cellulose as film forming materials by solvent casting method. Each layer of the multi-layer film contained 83.34 wt.% of polymer, 8.33 wt.% of glycerol as plasticizer and 8.33 wt.% of citric acid as cross-linker. Main characteristics of multi-layered films, such as solubility and swelling in a simulated salivary fluid, contact angle, mechanical properties were evaluated.

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