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Biobased alginate/castor oil edible films for active food packaging

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5 **ABSTRACT**

6 In this study, we aim to prepare novel bioactive edible films based on sodium alginate
7 and castor oil (CO). The chemical structures and crystallinity were investigated using FTIR and
8 XRD, respectively. Thermal stability by TGA was improved after CO addition. Addition of CO
9 to alginate resulted in better mechanical properties when compared with neat alginate. The water
10 vapour permeability was significantly reduced ($p < 0.05$) while the total colour difference was
11 not significantly changed ($p > 0.05$) after CO incorporation. The antibacterial study proved a
12 significant inhibitory effect of the films towards Gram-positive bacteria while no effect was
13 observed for Gram-negative bacteria.

14

15 *Keywords:* Alginate; Castor oil; Edible films; Water vapour permeability; Antibacterial activity.

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19 **1. Introduction**

20 Great efforts have been done in the recent years to increase food shelf-life by inhibiting
21 the fungal and bacterial development on its surface (Gokkurt, Findik, Unal, & Mimaroglu, 2012).
22 Usage of plastic packaging materials has a number of drawbacks like the generation of wastes
23 associated with these materials. Edible films (EFs) prepared from biodegradable biopolymers

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