Matrix	Essential oil (EO)/Active agent	Concentration levels and critical parameters	Mechanical properties	Barrier properties water vapor permeability (WVP) (g Pa <sup>-1</sup> s <sup>-1</sup> m <sup>-1</sup> )	Antimicrobial Properties	Referenc e
Chitosan and pectin blend film	Thyme	• Thyme EO (TEO) was incorporated at a concentration of 10%, 15% and 20% to the blend solution.	<ul> <li>TEO incorporation decreased the tensile strength from 7.43 to 7.07 MPa (20%).</li> <li>TTO incorporation increased the elongation at break from 23.03 to 28.22 MPa (20%).</li> </ul>	• WVTR decreases from 32.07 to 30.08 (g/h.m <sup>2</sup> ) with increasing concentration of TEO from 0 to 2%.	• Blend film with 20% TEO exhibited the strongest antimicrobial activity and reduced the growth of TPC and yeast and mold count by 2.29, and 2.09 log10 CFU/mL, respectively on 20th day of storage.	Our results
Chitosan	Tea tree	• Tea tree essential oil (TTO) was incorporated at a concentration of 0.5%, 1% and 2% (w/w) to the chitosan solution.	<ul> <li>TTO incorporation decreased the tensile strength from 113 to 54 MPa (2%).</li> <li>TTO incorporation decreased the elongation at break from 22 to 8 MPa (2%).</li> </ul>	• WVP decreases from 124 to $74.8 \times 10^{11}$ with increasing concentration of TTO from 0 to 2%.	Not done.	Sánchez- González et al. (2010).
Pectin	Clove bud	• EO was added in the film solution at concentrations of 0.5%, 1% and 1.5% (v/v) of solution.	<ul> <li>With incorporation of Clove bud EO, the TS increased from 14.78 to 20.98, 25.7, and 33.78 for 0.5%, 1% and 1.5% EO concentration.</li> <li>Elongation at break increased from 6.37 to 8.96, 10.68, and 11.75 for 0.5%, 1% and 1.5% EO concentration.</li> </ul>	• WVP of Clove bud EO incorporated films decreased from $13.22 \times 10^{-11}$ to $6.52 \times 10^{-11}$ with increasing the amount of EO up to 1.5%.	• The zones of inhibitions against S. aureus, E. coli and L. monocytogenes were increased from 18.50 mm to 30.27 mm, 12.53 mm to 21.20 mm and14.67 mm to 26.43 mm respectively with increasing the concentration CEO from 0.5 to 1.5%.	Nisar et al. (2018).
Pectin and chitosan blend	Tea polyphenols (TP)	• TP was added at concentrations of 0%, 2.5%, 5% and 15% ( <i>w/w</i> ), based on the dry weight of chitosan in mixture.	• The TS of chitosan-pectin film decreased by incorporation of tea polyphenols.	• WVP increased marginally with tea polyphenols incorporation.	• Antiseptic capacity was observed for preservation of fresh beef. It was concentration-dependent.	Gao et al. (2019).

Matrix	Essential oil (EO)/Active agent	Concentration levels and critical parameters	Mechanical properties	Barrier properties water vapor permeability (WVP) (g Pa <sup>-1</sup> s <sup>-1</sup> m <sup>-1</sup> )	Antimicrobial Properties	Referenc e
Pectin	• Pracaxi oil	• Direct oil-in-water (O/W) emulsions were prepared by adding pracaxi oil at 0, 0.1, 0.2, 0.3, and 0.4 wt% in deionized water and Tween 80 (20% v/v oil).	• Not studied	<ul> <li>A drastic reduction in the water vapor permeability of the bionanocomposites at 8 °C 6.8 × 10<sup>-13</sup> for pure pectin to 4.1 × 10<sup>-13</sup> for the films containing 0.4 wt% pracaxi oil.</li> </ul>	• The bionanocomposites were efficient in reducing the secondary oxidation of butter samples up to 60 days.	Candido et al. (2022).