ACTIVE GELATIN-BASED FILMS INCORPORATED WITH GUACO LEAVES EXTRACT (Mikania glomerata Sprengel)

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Guaco (*Mikania glomerata* Sprengel) is one of the main native plants used in the Brazilian herbal medicines trade, principally for coughs and flu treatments, whose use is considered safe and effective by the National Health Surveillance Agency. Scientific studies confirm the presence of active substances (phenolic compounds and flavonoids) and the expectorant and bronchodilator medicinal properties in this plant; however, guaco has not been studied for active films or food applications. The aim of this work was to evaluate the effect of the addition of hydroethanolic extract of guaco leaves (*Mikania glomerata* Sprengel) (HEG) on the properties of gelatin-based films. HEG was prepared dispersing 10g of guaco leaves powder in 100g of a solvent with 60% of ethanol in water, under an ultrasound treatment at room temperature for 30min followed by a thermal treatment at 60°C/30min. HEG was added (3 or 9g/100g) in gelatin (6g/100g) and glycerol (1.8g/100g) film-forming solution. Films were prepared by casting technique in polystyrene plates (15cm diameter) and dried at 30°C for 24h. These films were characterized for the physical-chemical properties, antimicrobial and antioxidant activities. Experimental data were analyzed by means of a multifactor analysis of variance and Tukey's test with a 95% significance level using ORIGIN®2022 software. Fourier Transform infrared spectrum (FTIR), microstructure (homogeneous), humidity (14.1-14.4g/100g), water solubility (35.7-36.5g/100g), opacity (0.17-0.20), puncture mechanical properties (13.7-15.7N; 4.1-5.0%), contact angle (79.8-87.9°), and antimicrobial activity (negative) were not affected ($p>0.05$) by the presence of HEG. However, color (?E*=3.2?4.5?8.2), UV-visible barrier, water vapor permeability (0.389?0.396?0.568g.mm/m².h.kPa), total phenolic compound content (0.69?0.88?1.44mg gallic acid/g), and ferric reducing antioxidant power (0.49?1.05?2.34mg trolox/g) increased ($p<0.05$) with HEG concentration in films. Regarding the tensile mechanical properties, films added of 3g/100g of HEG showed increased ($p<0.05$) resistance (22.6?36.3MPa) and stiffness (563?934MPa), without causing a decrease ($p>0.05$) in elongation (33.4?29.8%). While films added 9g/100g of HEG showed an increase ($p<0.05$) only in resistance (22.6?32.1MPa), without causing decreased ($p>0.05$) in stiffness (563?700MPa) or elongation (33.4?38.5%). Therefore, active films were obtained by the incorporation of the HEG, without prejudice to the other properties, in addition to promoting the strengthening of the mechanical properties of films.