**Biodegradable, UV-Blocking, and Antioxidant Films from Alkali-Digested Alfalfa Lignocellulosic Fibers**

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The dominating packaging material plastic has increased concerns due to its non-biodegradability and fragmentation into microplastics and nanoplastics, affecting human health and the ecosystem. Several biopolymers, like cellulose, starch, pectin, and proteins, are being studied to overcome this predicament. In this set, cellulosic residue from agricultural biomass, a non-food, non-toxic, sustainable, abundant, and inexpensive biomaterial, is suitable. Herein, lignocellulosic residue from alfalfa was extracted through alkaline treatment, 20% NaOH (AA20) and 50% NaOH (AA50), and biodegradable films were prepared. The film combination was optimized using the Box Behnken Design with the independent variables of 0.3-0.5 g lignocellulosic residue, 200-500 mM CaCl2, and 0.5-1.5% sorbitol against the responses tensile strength (TS), elongation at break (EB), and water vapor permeability (WVP). The 0.5 g AA20, 263.5 mM CaCl2, and 0.8% sorbitol, and 0.5 g AA50, 453.8 mM CaCl2, and 1.5% sorbitol were the optimized film combinations with TS, EB, and WVP of 5.7 MPa, 8.3%, and 1.4 × 10-10 g.m-1.s-1.Pa-1, and 11.4 MPa, 5.5%, and 1.0 × 10-10 g.m-1.s-1.Pa-1, respectively. The films block UV radiation and possess antioxidant activity. They follow Peleg water absorption kinetics and biodegrade within 35 days at 24% soil moisture. The outcome provides novel biodegradable films for packaging food and non-food products and addresses plastic perils. It further supports the cradle-to-cradle approach and offers a new revenue path for farmers.