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DEVELOPMENT OF BIO-BASED POLYMERS BASED ON AGROFORESTRY WASTE EXTRACTIONS OF LIGNINS CURED AND REINFORCED WITH ANTIMICROBIAL AGENTS DELAYING FUNGAL AND BACTERIAL ACTIVITY BY INCREASING THE PERIOD OF LIFE OF A FOOD ON THE SHELF

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In this work we evaluated the characteristics of a new material made of lignin in different molecular weights (high, medium and low molecular weight) in the development of films made of lignin incorporating essential oils and extracts functional previously analyzed, peppermint (*Mentha piperita*), oregano (*Oreganum vulgare L.*) garlic (*Allium Sativum*) and cinnamon (*Cinnamomun zeylanicum*) as antimicrobial agents. Our main goal is to limit the production of hydrocarbon based polymers in our country to decrease the burning of these and take advantage of the agroforestry waste as the main source of raw material for extraction of lignin: water hyacinth, wheat, maize, walnut shells, coconut fiber and wood (*sawdust*) of Alamo where it was demonstrated that these have a 20% to 45% lignin that resource where in the future we create in order to remove any residue both forestry and industrial. The antimicrobial activity of the essential oils and extracts functional was evaluated through the determination of the minimum inhibitory concentration and minimum bactericidal concentrations (CMB) against: Escherichia coli O157:H7 (ATCC 43888), *Salmonella typhimurium* (ATCC 14028), *Staphylococcus aureus* (ATCC 25923), the essential oils and extracts functional based on the results of microbiological, were incorporated in a polymer matrix of lignin to different molecular weights, and the antimicrobial activity of the films was evaluated by the diffusion technique in Mueller-Hinton agar and blood agar. The molecular weights were characterized by infrared through different processes of removal of lignin thus obtaining various types of lignin however the methodology being a bit orthodox organosolv processes of drag in fractions and retention of oxidant gases. It is a material with such characteristics that has a high temperature degradation that was determined by a term ogavimetrico TGA analysis , with antimicrobial and antifungal agent that slows down this growth

Biography

Luis Eduardo Gonzalez is currently a student at the Autonomous University of Chihuahua. He has been working on different research projects within the scope of developing innovative projects based in the environment and its improvement. In this research, he has studied the effect of the land within molecular arrays that help inhibit a very large proportion of microorganisms, as well as polymer matrices.

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