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**CHARACTERIZATIONS OF ALOE VERA FILLED POLYVINYL
ALCOHOL (PVA) BASED FILMS FOR BIODEGRADABLE
FOOD PACKAGING**

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ABSTRACT

CHARACTERIZATIONS OF ALOE VERA FILLED POLYVINYL ALCOHOL (PVA) BASED FILMS FOR BIODEGRADABLE FOOD PACKAGING

Biodegradable film has emerged as a potential alternative to oil-based plastic. It seeks to address the enormous issue of non-biodegradable plastic waste pollution. However, most biodegradable materials used in current biodegradable films have drawbacks, including weak strength, water sensitivity, and low durability. All these shortcomings make it difficult to market and apply them as food packages. In addressing these issues, this study aimed to develop and test a biodegradable, eco-friendly food packaging film using natural materials, including polyvinyl alcohol (PVA), chitosan, potato starch, and Aloe vera gel. The films were prepared using the solution casting method and then evaluated by a wide range of analytical techniques, including thickness measurement, moisture content evaluation, tensile strength test, swelling capacity analysis, biodegradability test, elongation at break test, and determination of Young's modulus. Among the several compositions examined, the optimum formula (CS/PVA/AV3/PS), with 15 mL of Aloe vera, exhibited an excellent balance of properties. This formulation exhibits moderate tensile strength (0.197 MPa), moderate rigidity (0.38 MPa), high elasticity (147.87% elongation), low moisture content (24%), low solubility (8.64% TSM), and total biodegradability over 7 days. These results emphasize the critical role of Aloe vera, not only as a plasticizer and stabilizer additive but also as a natural antimicrobial booster, to render this film a competitive and eco-friendly alternative to traditional petroleum-based packaging films.

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