

ABSTRACT

Aphthous stomatitis is an inflammation of the oral cavity characterized by painful canker sores that cause discomfort. This study aims to develop a chitosan and polyvinyl alcohol (PVA)-based patch as a local therapy using the solvent casting method with varying PVA concentrations (2.5% and 7.5%). The patches were dried using two methods: room temperature and oven drying. Characterization was conducted through FTIR, mechanical testing, degradation, swelling, and SEM analyses. FTIR results indicated strong interactions between chitosan and PVA via hydrogen bonding, marked by the shift and broadening of -OH and -NH₂ peaks, leading to a homogeneous composite structure. Mechanical testing showed an increase in cohesiveness (up to 0.38), elasticity (up to 1.90 mm), and adhesion (up to 59.85 mJ) with higher PVA concentrations, especially in samples with a 1:3 ratio dried at room temperature. Degradation tests showed that the Oven 1:3 and Room 1:3 membranes experienced weight loss of 4% and 6.25% respectively, indicating suitable biodegradability for oral application duration. Swelling tests revealed very high-water absorption, exceeding 1000% within 60 minutes, although this may lead to premature disintegration if not controlled. SEM analysis revealed a porous but not fully homogeneous surface, suggesting the need for formulation modification, such as plasticizer addition, to improve stability. Overall, the chitosan–PVA combination, particularly at a 1:3 ratio with room-temperature drying, demonstrated the most optimal physicochemical and mechanical characteristics for aphthous stomatitis patch applications.

Keywords: *chitosan, PVA, patch, aphthous stomatitis, solvent casting.*