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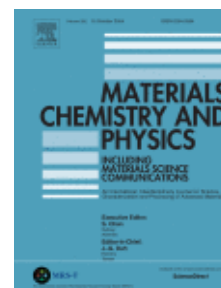
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Title: Disintegration of fish-collagen by bromelain added in a mucoadhesive patch: An insight for achieving of therapeutic lead for oral submucous fibrosis

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Abstract: Oral submucous fibrosis (OSF) is a chronic and complex condition characterized by formation of fibrous tissue within the oral cavity; often linked to the regular consumption of areca nuts and related substances. OSF leads to restricted mouth opening, mucosal rigidity and dysphagia, with potential progression to cancer. Bromelain, a natural enzyme derived from pineapples, exhibits fibrinolytic properties, and we have tried to explore the influence of bromelain used in mucoadhesive buccal patch on collagen (obtained from Fish), a key component of the extracellular matrix affected in OSF, through Native-PAGE analysis and several biophysical approaches like Circular Dichroism, Fluorescence Spectroscopy, Time-Correlated Single Photon Counting, Fluorescence Microscopy, and Polarizing Optical Microscopy. The outcome of our study clearly emphasizes that bromelain interacts with collagen, leading to its degradation and disintegration, as evidenced by alterations in its structure and morphology, while the mucoadhesive property of the patch remains unaffected. This comprehensive analysis opens a new avenue in the clinical research and provides a clear insight into the potentiality of the therapeutic application of bromelain-containing patches for OSF treatment.



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