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Paper Title: Bioadhesive Property of Medium-chain-length Polyhydroxyalkanoate as a Biomedical Elastomer

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## Abstract

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Medium-chain-length polyhydroxyalkanoate (MCL-PHA) is a biodegradable polyester with an ability to biodegrade and interact with the human body, making it a material of interest for various medical applications. As a versatile biopolymer, there is a growing trend towards its potential utilization in the field of medical elastomers. This study assessed the medical adhesive capabilities of MCL-PHA by evaluating its physical properties compared to commonly used medical adhesives. The results demonstrate that MCL-PHA possesses multiple characteristics aligning with those of existing medical adhesives. Specifically, MCL-PHA exhibits an adhesive strength to porcine skin of 50.2 kPa, closely resembling wound dressing adhesives and surpassing surgical adhesives. Furthermore, its shear resistance is comparable to surgical adhesive, measured at 27.6 kPa. The testing of material detachment from porcine skin indicates that MCL-PHA can be removed without causing harm. These findings illustrate the potential of MCL-PHA as a medical adhesive, indicating its properties which are consistent with both external wound dressings and surgical adhesives.

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