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ARTICLE

Development and characterization of sodium alginate/*bifidobacterium probiotic* biohybrid material used in tissue engineering

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Abstract

“Mechanical properties” are crucial for biodegradable and/or non-biodegradable materials used in tissue engineering applications. In this study, bio-hybrid films were produced by using both *Bifidobacterium animalis subsp. lactis BB-12 probiotic* strain and *Bifidobacterium infantis* in combination with sodium alginate (SA), which demonstrates biocompatibility and facilitated gelation properties. Bio-hybrid films were characterized by using different methods. Based on the spectroscopic and mechanical analysis, it was found that mechanical strength increased in films produced by adding *Bifidobacterium infantis* in SA while this increase was relatively lower as compared to those containing *Bifidobacterium animalis subsp. lactis BB-12* as cross-linking ratio increases. Besides, bacteria contained in bio-hybrid films increased the percentage of amorphous zone of SA in SA/bacteria films, which reduced the crystallinity ratio. This indicated that crystalline chains contained in the structure of SA are degraded by bacteria.

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DATA AVAILABILITY STATEMENT

No. Research data are not shared.

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