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Alginate and alginate composites for biomedical applications

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Abstract

Alginate is an edible heteropolysaccharide that abundantly available in the brown seaweed and the capsule of bacteria such as *Azotobacter* sp. and

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consequently limits its potential in the soft tissue regeneration and becomes inappropriate for the usage related to load bearing body parts. To cater this problem, wide range of materials have been added to alginate structure, producing sturdy composite materials. For instance, the incorporation of adhesive peptide and natural polymer or synthetic polymer to alginate moieties creates an improved composite material, which not only possesses better mechanical properties compared to native alginate, but also grants additional healing capability and promote better tissue regeneration. In addition, drug release kinetic and cell viability can be further improved when alginate composite is used as encapsulating agent. In this review, preparation of alginate and alginate composite in various forms (fibre, bead, hydrogel, and 3D-printed matrices) used for biomedical application is described first, followed by the discussion of latest trend related to alginate composite utilization in wound dressing, drug delivery, and tissue engineering applications. (C) 2021 Published by Elsevier B.V. on behalf of Shenyang Pharmaceutical University.

Keywords

Author Keywords: [Alginate](#); [Alginate composite](#); [Tissue engineering](#); [Wound dressing](#); [Drug delivery](#)

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