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Novel thermo-responsive hydrogel from gellan gum and methylcellulose for use as advanced wound dressing

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Cavity wound is one of the complex, clinical managements. Traditionally ribbon gauze soaked in saline solution was used to pack a cavity wound. This practice is now considered to be unsuitable due to that it is not conformable to the wound site. However, In-situ hydrogel formation that undergoes sol-gel transitions response to temperature has been widely interesting. In this study, physical blends of two materials between Gellan Gum (GG) and Methyl Cellulose (MC) in phosphate buffered saline aqueous solution (pH 7.4) were used to prepare the thermo-responsive injectable hydrogel for use as cavity wound dressing. A rotational rheometer was used to determine the rheological properties of blends. For all the samples, the G' values exceed the respective G'' values in the measured frequency range at 37°C, confirming the formation of hydrogels. Moreover, the MC solutions exhibit a board linear viscoelastic region with a stress applied to break the network of structure that is larger than 100 Pa. A degree of gelation of MC solutions slightly changes with any concentrations. Besides, FT-IR technique was used to confirm the occurrence of a specific chemical reaction and *in-vitro* cytotoxicity test on human fibroblast cells via MTT assay was evaluated to prove that it can be used in human tissue.

Biography

Nattakarn Wankama is a master's degree polymer science student at the petroleum and petrochemical college, Chulalongkorn University, Thailand. She holds the bachelor's degree of engineering in petrochemical and polymeric materials from Silpakorn University, Thailand. She has varied background in Biomaterials for wound dressing applications provided the perfect foundation for developing advanced wound dressing.

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