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Short Communication

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Nano Formulated Proanthocyanidins as an Effective Wound Healing Component

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Abstract

Proanthocyanidins (PCs), a component of grape seed extract (GSE), has recently being used for the treatment of wounds. Proanthocyanidins, the principal component of GSE, has recently been identified as a main mediator of GSE medicinal properties. We present here an approach for manufacturing PCs/soluplus (SOLU) blended nanodispersion prepared by freeze drying technique to adequately enhance the stability and bioavailability of the PCs for wound repair. The PCs/SOLU nanodispersion (0.5, and 1.5 g) was incorporated into 10 g of a simple ointment base by melting and trituration to give two batches of the ointment formulation which could be easily applied topically to wounds. Excision wound measuring about 3 cm in depth was created on the Wistar rats placed in groups (n = 6) and the ointment applied topically on the wounded area which was measured daily until epithelialization and complete wound closure. Grape seed extract ointment and Povidone-iodine ointment (1 %) served as the control and standard treatments, respectively. PCs heals the wound by mobilising the fibroblasts in the wound site and inhibits the inflammatory response through decreased expression of monocyte. Immunological, macroscopical and histological evaluations have shown that the use of ointment containing PCs/SOLU nanodispersion enhances the cell adhesion and migration.

The grape seed extract (GSE) containing proanthocyanidins (PC's) has been dispersed in polymer matrix soluplus (SOLU) by the freeze-drying method. The morphological analysis was carried out using atomic force microscopy (AFM), scanning electron microscopy (SEM) and Transmission electron microscopy (TEM). The in-vitro release of the nanodispersion formulations was evaluated by simulated intestinal fluid (SIF). The antioxidant activity of GSE and the formulation were evaluated by employing various in-vitro assays such as 2, 2'-azino-bis (3-ethylbenzothiazoline-6-sulphonic acid) (ABTS), 2, 2-diphenyl-1-picrylhydrazyl (DPPH), Ferric reducing antioxidant power (FRAP) and peroxidation inhibiting activity.

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