

Possibility and scope of transdermal comfrey multipurpose nano patch: for the treatment of broken bones, wounds and external ulcers

Opinion

Comfrey is renowned since ancient times as a wound healer and a choice for a first aid kit and it is one of the easiest herbs to grow. The wound healing property of comfrey is due to the presence of allantoin and its astringency property makes it precious in the treatment of bleeding. In the treatment of wounds, external ulcers, and broken bones, comfrey may be applied as a compress or poultice. Since many years, various traditional medicines in the form of a topical herbal paste has been widely used in several soft tissue injuries, broken bone setting, wounds, external ulcers etc.^{1,2} It is necessary that the active herbal ingredients should be effectively transported into skin and blood circulation for their therapeutic actions. However, many active herbal compounds have limited solubility and therefore it creates a hurdle in formulating patient compliant transdermal patches. For the systemic delivery of drugs, transdermal drug delivery system (TDDS) is one of the suitable routes. TDDS has the ability to deliver medications more convenient and effective way than conventional systems. Nano-technology can be utilized to process the herbal extracts and thereby solves the issue of poor aqueous solubility and toxicity of active ingredients in the herbal formula. The traditional topical herbal paste can be further reformulated into a form of nano emulsion by homogenization process and design into a perfect shaped matrix-type transdermal patch. Delivery of drugs to the skin is the potential application of nanotechnology. This overall menace the effectiveness of their use in topical treatments due to low bioavailability. In future nanotized herbals may play a pivotal role in the reduction of dose and toxicity from a certain herbal constituent. Brief review of research and development in the field: Dissolvable needle free Nano patches, Nano patch pain free vaccines, are few recent developments in the field. Nano and Advanced Materials Institute Limited (NAMI), Hongkong, developed medicated nano patch with Chinese traditional herbal medicines. These are cost effective technology which improves patient compliance too. Industries around the world are developing, so that requirement of smart materials for the development of novel products rises up significantly. Developed countries like United States, UK and most of the European countries have substantially increase their investment in nanotechnology over the last decade. National and International status: In India comfrey has not been used much as herbal medicine. It has been only used as a household therapy for wound healing especially as poultice or compress in the treatment of wounds and broken bones. Comfrey has been used as an herbal medicine in Japan for more than 2,000 years.³ In Western Europe comfrey has been used topically for treating inflammatory disorders such as arthritis and gout. In Germany and Canada distribution of comfrey is restricted due to its substantial toxicity.⁴ Significance of the study: Nano-patch does not have any role in digestive system i.e. it bypass the digestive system and therefore does not have side effects like gastric irritation

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and liver damage which is often associated with oral pain killers.⁵⁻⁷ Nano patch delivers a much higher dose of the drug than conventional medicines because it is directly pasted on the affected area. It does not require re-application of medicine after 3-4 hours and delivers the drug at a controlled rate for 12 hours. It is non-messy and non-greasy with exceptional side effects and allergic reactions, so that it can be easily applied under clothing. The outline is nanopatch could enhance the transdermal delivery of active ingredients which would be economical with patient compliance.

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Conflict of interest

Author declares that there is no conflict of interest.

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