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Development of herbal mosquito repellent nanopatch

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There were considerable efforts made to promote the use of environmentally friendly and biodegradable natural insecticides and repellents, particularly from botanical sources. However, limited period of effect is the major drawback of these products. There is a need in art for a safe, cost effective and highly efficient carriers/absorbent composition of matter that provides for a controlled time release of an aromatic substance, such as an essential oil or a combination of essential oils. The objective of research project relates to wearable insect repellent patch comprised of nanopatch intended to provide personal protection from insect bites particularly from mosquitoes. The repellent action is attributable to a one or mixture of essential oils including eucalyptus oil, citronella oil, geranium oil, rosemary oil, lemongrass oil and neem oil. Resultant nanopatch have shown enhanced surface-to-volume ratio, high porosity, numerous active sites and controlled release of encapsulated oils. The developed nanopatch serve as matrix for essential oils, enclosed in a perforated backing substrate and further with a release liner to protect the volatile component from the external environment. The resulting patch provides an effective means of personal protection against flying insects and safe for use in children.