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### Oregano essential oil polymeric micelles-based hydrogel as a dermal drug delivery system: *in vitro* and *in ovo* assessment

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The essential oil extracted from *Origanum vulgare* var. *vulgare* (OEO) is intensively studied for novel therapeutic dermatologic applications, such as an alternative approach for acrochordons, also known as skin tags. Innovative cutaneous formulations are developed in order to improve bioavailability and stability of essential oils. This study aims to investigate an OEO cutaneous drug delivery system - a polymeric micelle-based hydrogel (OEO-PbH). Scanning electron microscopy (SEM) analysis indicated a regular aspect after the encapsulation process, while *in vitro* release studies showed a sustained release of the essential oil from the polymeric micelle-based hydrogel. As revealed by the *in ovo* assessment, using the chick chorioallantoic membrane (CAM), OEO-PbH did not cause irritative effects on CAM and was well-tolerated. In the same time, the angiogenic process was modulated at concentrations as high as 200  $\mu\text{g}/\text{mL}$ . Hence, the optimal particle characteristics and release properties of OEO-PbH, its non-irritative character and the modulatory effects on angiogenic process on CAM indicate the potential of OEO-PbH as a safe and biocompatible approach for dermatologic applications such as skin tags.

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