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In vitro drug release and *ex vivo* percutaneous absorption of resveratrol cream using HPLC with zirconized silica stationary phase

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Since the designs of optimal formulations for resveratrol permeation via the skin are lacking, the aim of this study was to establish the profile of resveratrol permeability into and across human skin. For that, a laboratory-made chromatographic column was used (Zr-PMODS), with its performance being compared to a traditional C18 column. *In vitro* drug release was conducted with polysulfone membranes, and the flux (J_S) was 30.49 μg cm^{-2} h^{-1}), with a lag time (L_T) of 0.04 h, following a pseudo-first-order kinetics. For ex vivo percutaneous absorption using excised female human skin, the kinetic profile was the same, but J_S was 0.87 μg cm^{-2} h^{-1} and L_T was 0.97 h. From the initials 49.30 μg applied to the skin, 9.50 μg were quantified in the receptor medium, 20.48 μg was retained at the *stratum corneum* (do not account as permeated) and 21.41 μg was retained at the viable epidermis + dermis (account as permeated), totalizing 30.90 μg of resveratrol permeated after 24h of application (62.6%). From these results, one can conclude that a person using the 1-g emulsion dose released by the pump containing 20 mg of resveratrol will have, theoretically, 12.53 mg of it liberated into his bloodstream, gradually and continuously for 24 h.

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