Arch Dermatol Res. 2010 Nov 18. [Epub ahead of print]

Development and evaluation of vesicular system for curcumin delivery.

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Abstract

Creams and gels containing curcumin are popularized worldwide and marketed all over the world, but even after incorporation of high amount of curcumin in topical formulations, significant antioxidant and anti-aging effect could not be achieved. Objective of the present study was to develop vesicular system for delivery of curcumin to achieve enhanced topical bioavailability. Complex of curcumin with phosphatidyl choline (PC) was prepared and characterized on the basis of TLC, DSC, melting point and IR spectroscopic analysis. The complex was further converted into vesicles (phyto-vesicles). Liposomes and niosomes of curcumin were also prepared and all these vesicular formulations were incorporated into carbopol gel to make feasible for topical application on skin. Anti-aging effects of these formulations were compared with plain curcumin and physical mixture of curcumin with phosphatidyl choline in UV-induced oxidative stress in mice. Analytical reports along with spectroscopic data revealed the formation of the complex. In the present study, the phyto-vesicles were found to be most effective than all other formulations and plain curcumin in providing enhanced antioxidant and antiaging effect. This increase may be due to the amphiphilic nature of the complex, which greatly enhances the water and lipid miscibility of the curcumin. This study clearly indicates the superiority of CU-PC complex and the phyto-vesicles prepared from CU-PC complex over others in providing enhanced anti-aging, antioxidant and anti-wrinkle effect.

PMID: 21085975 [PubMed - as supplied by publisher]