Permeation studies of emulsions containing ruthin and quercitrin from *Spondias lutea*

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Introduction

Flavonoids have been widely incorporated into cosmetic and dermatological formulations with benefits such as antioxidant, improved skin tone, less lines and wrinkles. Brazil has a huge biodiversity, with one of the richest flora of the world and the few existing studies justify the quest for greater development in this area. The cajazeira (*Spondias lutea* L.), plant of the Anacardiaceas' family from the Tropical America is widely disseminated in almost all parts of Brazil. This plant was chosen because of the presence of flavonoids (ruthin and quercitrin), witch has antioxidant activity.

Aim

The aim of this research was to study the permeation of different non ionic emulsions containing flavonoids extracted from *Spondias lutea* (ruthin and quercitrin) from through synthetic and human epidermis membranes.

Conclusions

The results indicate that is possible to use the glycolic extract of *Spodias lutea* has an antioxidant for skin care products, such as anti aging O/W emulsified non-ionic system.

References

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Material and Methods

Ethanolic extract (70 ° GL) was obtained by percolation, evaporated for removing the solvent, and dispersed in ethanol: propyleneglycol (1:1) in a concentration of 8%.
O/W non-ionic emulsions containing 8% this extract were prepared.

The flavonoids were analysed using spectrophotometry (λ=274nm) in ethanol: propyleneglycol (1:1)

In vitro permeation of flavonoids trough different membranes was investigated using Franz-type diffusion cells. A repeated measures design using 6 replicated cells per formulation was used to establish permeation profiles of ruthin and quercitrin which was quantified in the receptor fluid (ethanol: propyleneglycol (1:1)) using a UV method.

Results and Discussion

In vitro permeation studies:

The results showed that the glycolic extract permeated the all membranes but the permeation profiles were different according to the membrane used (figures 1,2 and 3).

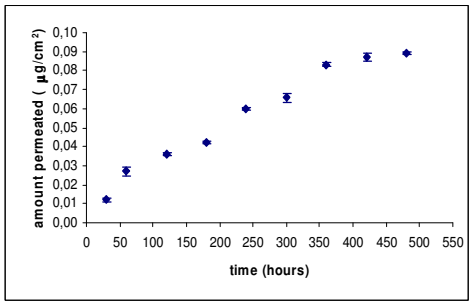

Fig.1 : Amount of quercitrin and ruthin permeated through cellulose membranes

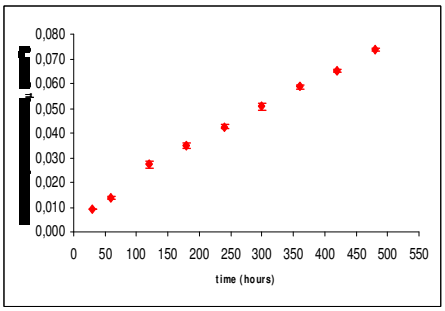

Fig. 2 : Amount of quercitrin and ruthin permeated through silicone membranes

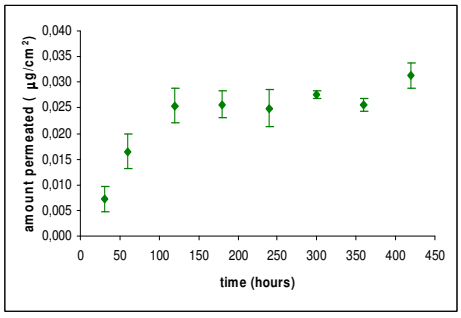

Fig. 3 : Amount of quercitrin and ruthin permeated through human epidermis

As expected the cellulose membrane allowed higher permeation of flavenoids. In these membranes there is a tendency to reach the steady state after 400 min.
In silicone membranes this trend is not observed after 480 min.
It is observed high variability in the results obtained with human epidermis, so this data should be considered preliminary (it is not possible to calculate the flow and lag time).