

Effect of batyl-alcohol on percutaneous absorption of avobenzone

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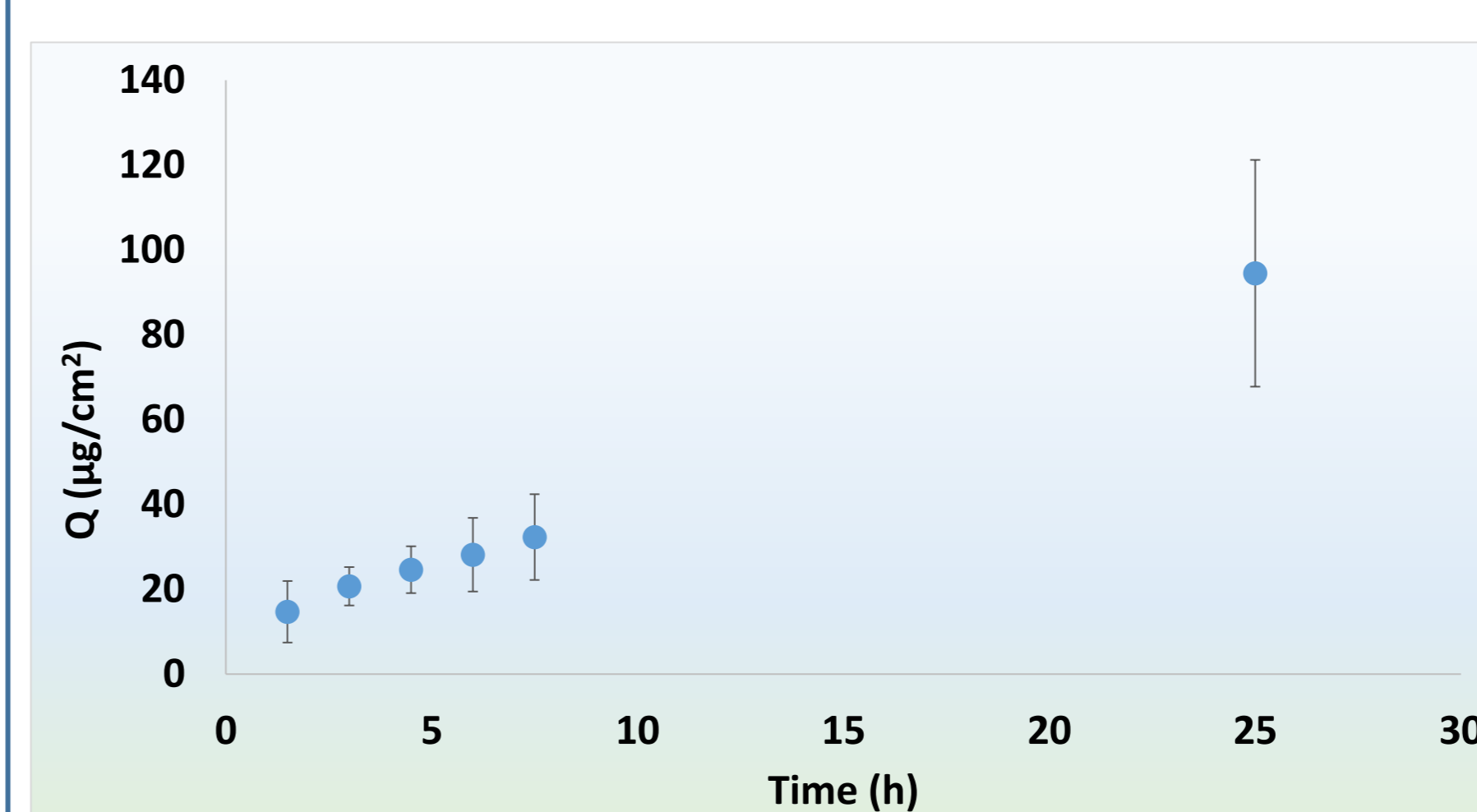
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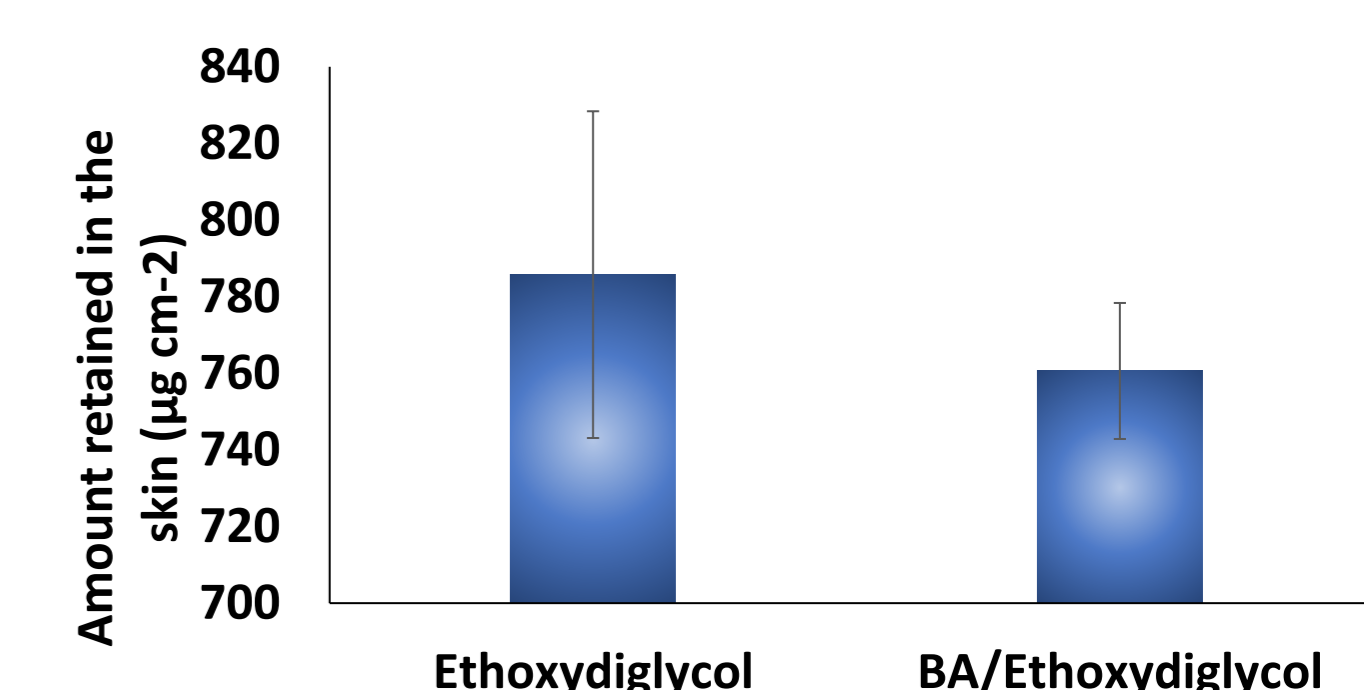
Introduction:

There is no doubt about the imperative need to protect the skin from the harmful effects of solar radiation through the use of topical sunscreens. However, it is desirable that sunscreens do not penetrate the viable epidermis and that they do not pass into the systemic circulation, due to the toxic effects presented by some of them. One of the most used sunscreens in these type of products is Avobenzone (AVO) due to its broad absorption spectrum in the UVA region. Nonetheless, it undergoes photodegradation, generating free radicals and compounds responsible for causing photoallergic and phototoxic reactions [1-4]. Some alkylglycerols, including batyl alcohol (BA), have been reported to delay the transdermal penetration of some drugs such as piroxicam, diclofenac and naproxen [5]. With this in mind, in the present work, the ability of BA to retard the transdermal penetration of AVO was evaluated

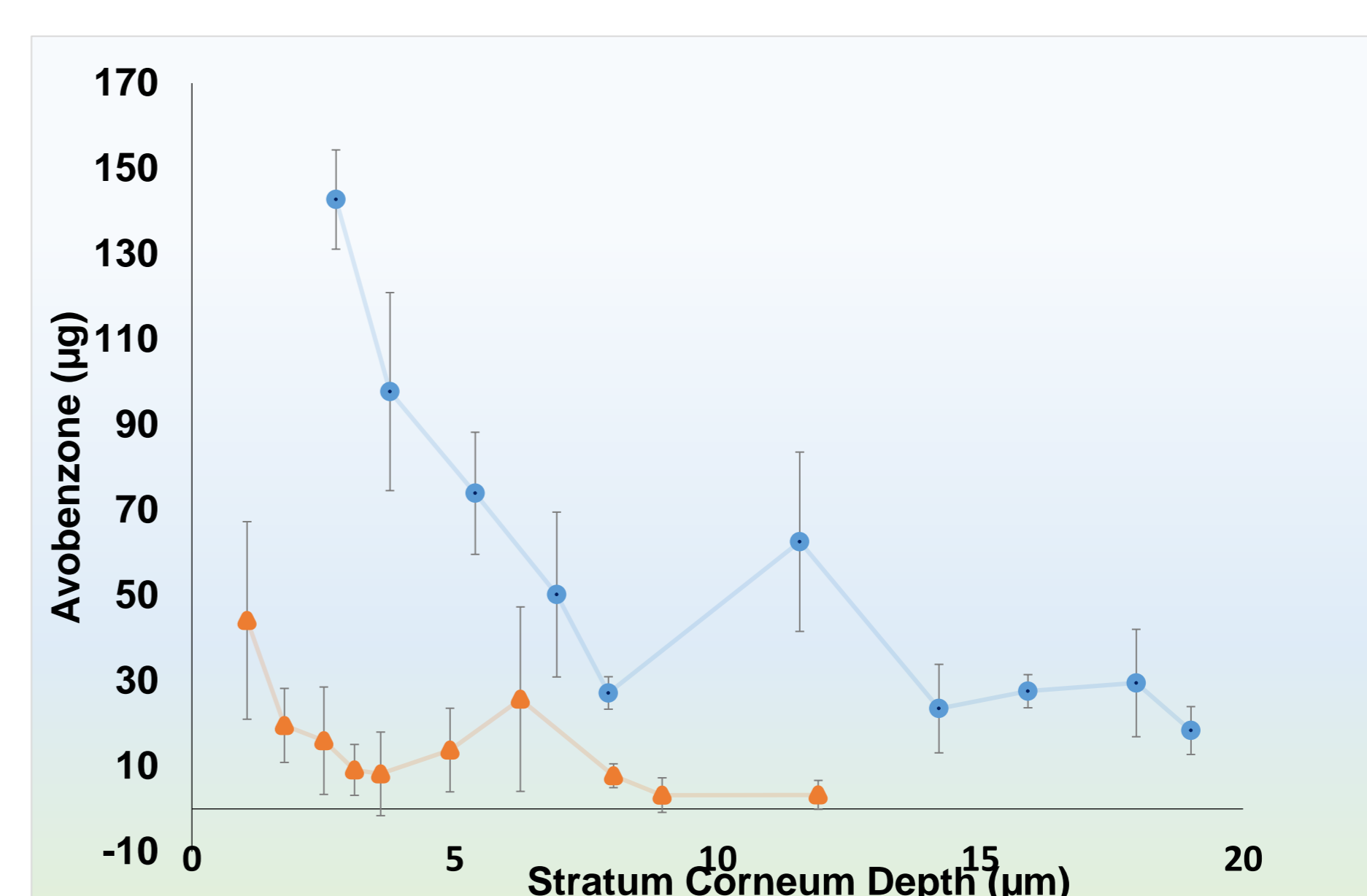
Results & Discussion:



Cumulative amount (Q) of AVO in ethoxydiglycol permeated through pigskin ex vivo (mean ± SD, n = 6)



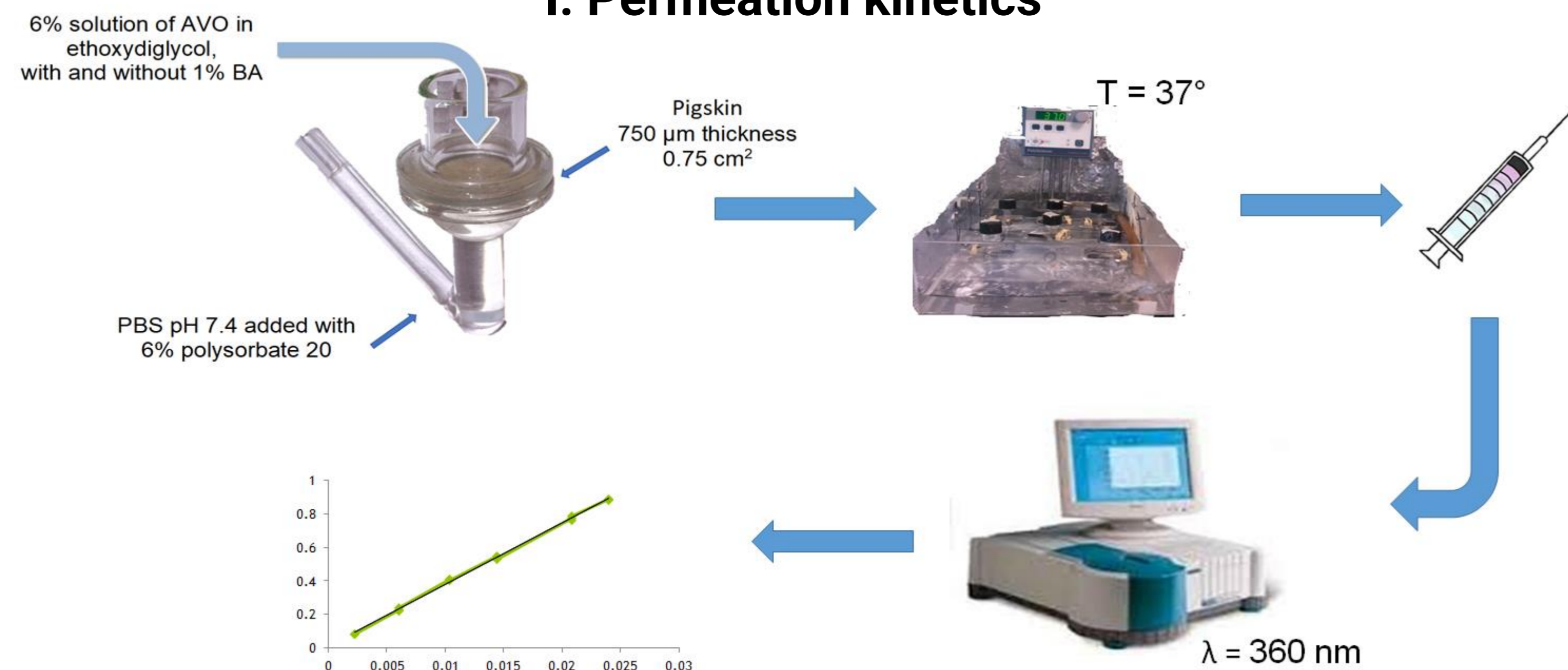
Amount of AVO retained in the skin (µg.cm²) after the permeation experiments



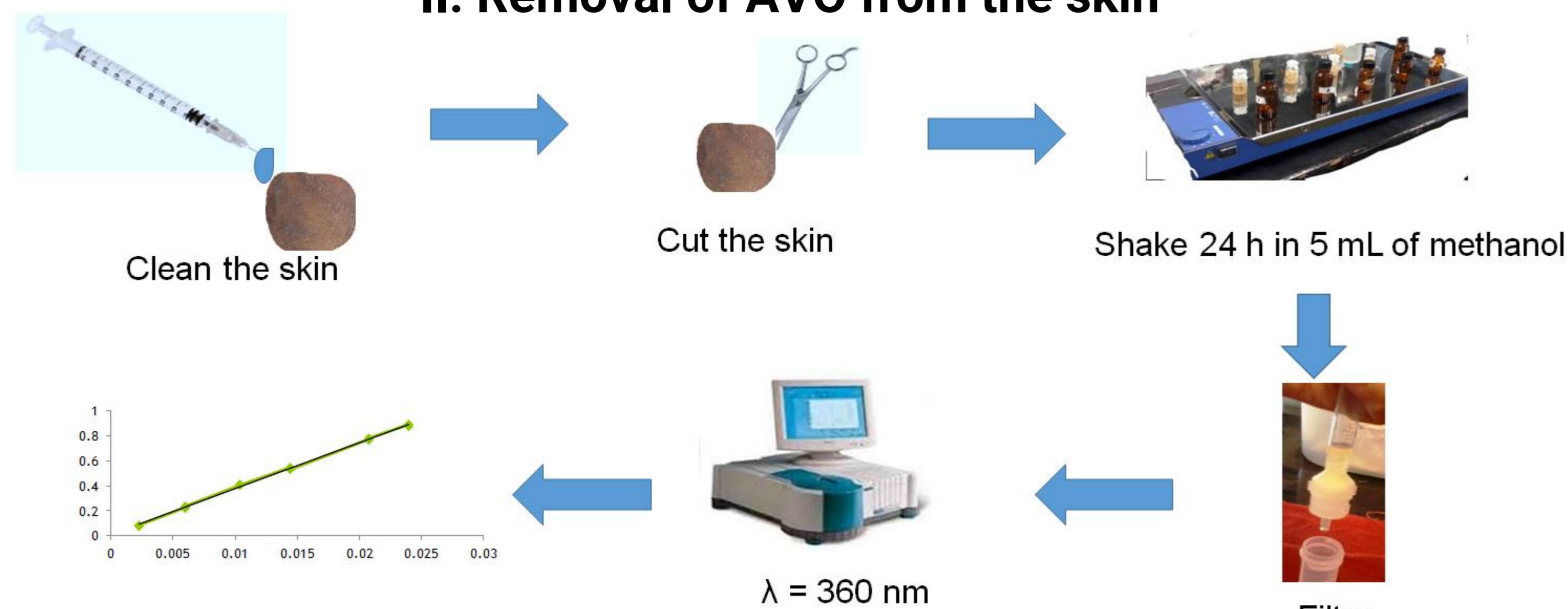
Distribution of AVO in stratum corneum as removed by tape strips. ● ethoxydiglycol, ▲ batyl alcohol/ ethoxydiglycol, (mean ± SD, n = 6) (mean ± SD, n = 6).

Materials & Methods:

I. Permeation kinetics

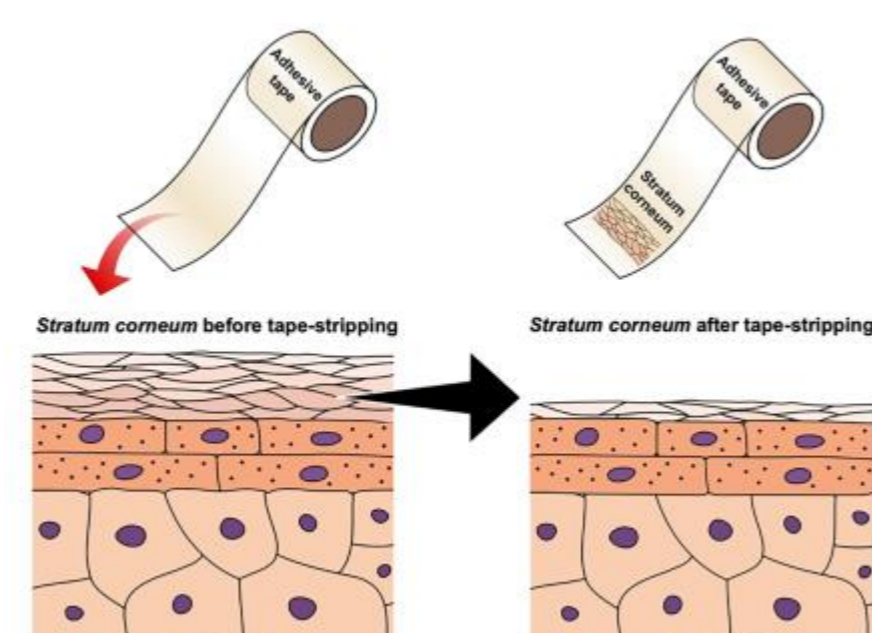


II. Removal of AVO from the skin



III. Tape Stripping

The tape stripping technique was used to determine the AVO distribution within the stratum corneum after permeation studies



Conclusions:

Ideally, sunscreens are expected to be retained in the skin, with minimal penetration. Therefore, the use of permeation retarders has shown to be a useful option to achieve this goal. In this work, it was found that BA is capable of reducing AVO permeation. The mechanism of action of BA is mainly related to its ability to insert itself into the lipid bilayer of SC, increasing the order of this bilayer, thus delaying the penetration of other molecules. These results are promising and allow us to suggest the inclusion of BA in topical sunscreen formulations, with improved efficacy and reduced side effects.

Aknowledgments:

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References:

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