

INTERACTIONS SKIN-VEHICLES

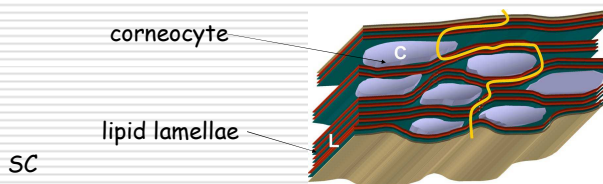
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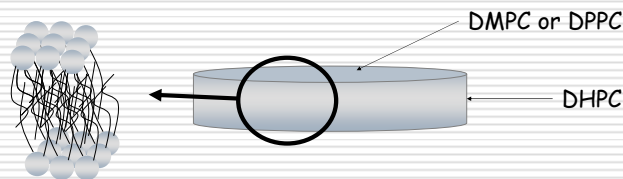
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INTRODUCTION:

The **stratum corneum** (SC) is the outermost layer of the mammalian skin, with the corneocytes (flat and dead cells filled with keratin filaments) into the lipid matrix structured in lamellae¹.



Bicelles are small disks formed by phospholipids of different length chain².



DMPC/DHPC and DPPC/DHPC bicelles
 $q = \text{DMPC/DHPC or DPPC/DHPC molar ratio}$

In vivo studies showed that topical application of bicelles changed biophysical properties of skin².

The **AIM** of this work is understand **how the bicelles interact with the SC: SAXS and WAXS study**

MATERIALS & METHODS:

- ✳ SC (removed from pig skin³) + bicelles
- ✳ DMPC/DHPC & DPPC/DHPC, $q=2$, 20% w/v lipid conc².
- ✳ SAXS (1.5m) & WAXS (0.35m) at **BM16** (ESRF), $\lambda=0.9795 \text{ \AA}$

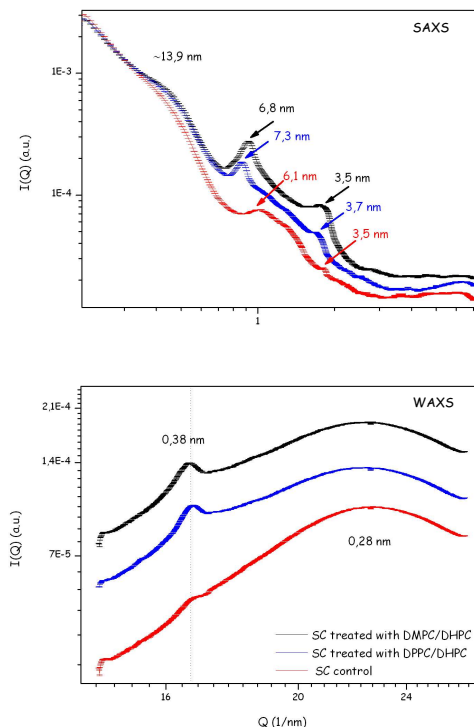
- ✦ bicelles modify lipid structure and organization of SC
- ✦ d-spacing for SC treated (6.8 and 7.3 nm) is higher, than for SC native (6.1 nm). Probably, water from bicelles produces the swelling of lipids
- ✦ the longer the lipid chain (DPPC), the longer the d-spacing
- ✦ shoulder around 13.9 nm could be compatible with the long spacing lamellar phase¹
- ✦ peak corresponding to 0.38 nm distance is promoted in SC treated (WAXS results). Some authors described an orthorhombic lateral packing of lipids with this spacing⁴

REFERENCES:

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RESULTS & DISCUSSION:



IN SUMMARY

bicelles penetrate into the SC and modify the lipid phase. Changes could be related to the water contribution, but also to the lipid structure. Bicelles are able to alter the lipid organization, probably promoting changes in the lateral packing of the lipids. For all of these reasons, bicelles are very good candidates as topical drug delivery systems into or across the skin.