Lipid model membrane systems as a tool for unraveling the underlying factors for skin barrier dysfunction

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STELLINGEN

behorende bij het proefschrift

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1. Free fatty acid (FFA) compositional changes in atopic dermatitis skin have a greater impact on the barrier function than changes in the CER profile due to a change in packing density, which does not occur when shortening the CER chain length *(this thesis)*.
2. The unanticipated low permeability of the α-hydroxy phytosphingosine-based model is associated with a stronger headgroup hydrogen bonding network *(this thesis)*.
3. Our findings show that an increased level of CER C34, which correlated with an increase in TEWL in atopic dermatitis patients' skin, contributes to the barrier dysfunction *(this thesis)*.
4. Increased levels of sphingosine-based CERs at the expense of phytosphingosine-based CERs, as observed in the diseased skin, may contribute to the barrier function impairment *(this thesis)*.
5. Increased levels of monounsaturated fatty acids in stratum corneum of atopic dermatitis and Netherton syndrome patients may contribute to the altered lipid organization and impaired skin barrier function *(Mojumdar, E. H. et al., Langmuir 2014. 30 (22), 6534-43)*.
6. The presence of relatively ordered lipids and low amounts of water make FTIR spectroscopy an ideal biophysical technique for studying the stratum corneum *(Moore, D.J et. al. Biochem. Biophys. Res. Communion., 1997. 231(3): p. 797-801)*.
7. Understanding the permeability barrier function of the skin is important for a rational design of transdermal drug delivery systems as well as for our understanding the etiology, and possible treatment, of a range of skin diseases in which barrier function is compromised *(Hill, J.R. and Wertz, P.W., Biochim. Biophys. Acta., 2003. 1616, p. 121-126)*.
8. Detailed studies on the effect of molecular structure of individual CERs on the SC lipid organization are only possible with synthetic CER mixtures as their composition can be accurately selected and systematically modified *(de Jager, M., et al., J. Invest. Dermatol., 2004. 123(5): p. 911-6.)*.
9. Nothing has such power to broaden the mind as the ability to investigate systematically and truly all that comes under thy observation in life *(Marcus Aurelius)*.
10. An expert is someone who knows some of the worst mistakes which can be made, in a very narrow field *(Niels Bohr*).
11. The greatest enemy of knowledge is not ignorance, it is the illusion of knowledge *(Stephen Hawking)*.
12. No great discovery was ever made without a bold guess *(Sir Isaac Newton)*.

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