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Peptides/Enzymes to the rescue

1. Does the efficacy of the peptides depend on the palmitoyl chain? Did you screen various chain lengths?

We have selected palmitoyl as the most compatible with human cell lipid membranes. We have not screened bioactivity as a function of lipid chain length but in Biomacromolecules 18, 2013 (2017) we have reported on the lipid-chain dependent self-assembly behaviour of the lumican lipopeptide that I presented.

2. Why peptides over other molecules?

Peptides are naturally evolved biomolecules with high specificity and potency. New peptide sequences can also be created by design based on known structures and functions or taking inspiration from nature (biomimicry).

3. Are these commercially available ingredients?

Matrixyl is commercially available from several sources, the lumican peptide I mentioned developed in our labs is not commercially available and nor is the elastase substrate peptide.

4. Are any of the peptides from a natural source?

The ones I presented on are not from natural sources although the sequences are based on natural proteins. This means that in principle these peptides could be isolated from natural sources although this could involve significant processing and the cost would likely exceed that of synthesis of 'nature-identical' peptides. There are other potential peptides derived from natural sources.

5. What is the cost of such compounds? How complex would be the supply chain?

I don't have precise costing information, it would depend on desired purity. I believe one supplier of Matrixyl is Croda which also sells formulations.

6. Have you shown penetration of the lipopeptides beyond the SC using either ex-vivo human skin or porcine skin?

We haven't, however there is a study by K.Lintner et al on this.

7. Is there any significant success with plant-based / derived peptides?

I am not aware of specific instances but there are many very interesting functional plant derived peptides.

8. There are hundreds of peptides available already for cosmetic formulations - how to know which ones are the best?

The existence of peer-reviewed scientific literature to support claimed activity might be checked. One example is our Molecular Pharmaceutics 2013 paper on C16-KTTKS.

9. How do you explain in vitro vs in vivo correlation?

There are few thorough peer-reviewed studies of in vivo bioactivity so there is not much quantitative data to support a correlation between in vivo and in vitro activity.