Closer to a cure for eczema

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Scientists have found that a strain of yeast implicated in inflammatory skin conditions, including eczema, can be killed by certain peptides and could potentially provide a new treatment for these debilitating skin conditions. This research is published today in the Society for Applied Microbiology's journal, *Letters in Applied Microbiology*.

20% of children in the UK suffer from atopic eczema and whilst this usually clears up in adolescence, 7% of adults will continue to suffer throughout their lifetime. Furthermore, this type of eczema, characterized by dry, itchy, flaking skin, is increasing in prevalence. Whilst the cause of eczema remains unknown, one known trigger factor is the yeast *Malassezia sympodialis*.

This strain of yeast is one of the most common skin yeasts in both healthy individuals and those suffering from eczema. The skin barrier is more fragile and often broken in those suffering from such skin conditions, and this allows the yeast to cause infection which then further exacerbates the condition. Scientists at Karolinska Institute in Sweden looked for a way to kill *Malassezia sympodialis* without harming healthy human cells.

The researchers looked at the effect on the yeast of 21 peptides which had either; cell-penetrating or antimicrobial properties. Cell-penetrating peptides are often investigated as drug delivery vectors and are able to cross the cell membrane, although the exact mechanism for this is unknown. Antimicrobial peptides, on the other hand, are natural antibiotics and kill many different types of microbe including some

bacteria, fungi and viruses.

Tina Holm and her colleagues at Stockholm University and Karolinska Institute, added these different peptides types to separate yeast colonies and assessed the toxicity of each peptide type to the yeast. They found that six of the 21 peptides they tested successfully killed the yeast without damaging the membrane of keratinocytes, human skin cells.

Tina commented "Many questions remain to be solved before these peptides can be used in humans. However, the appealing combination of being toxic to the yeast at low concentrations whilst sparing human cells makes them very promising as antifungal agents. We hope that these peptides in the future can be used to ease the symptoms of patients suffering from atopic eczema and significantly increase their quality of life."

The next step will be to further examine the mechanism(s) used by the peptides to kill yeast cells, in order to develop a potential treatment for eczema and other skin conditions.

More information: Cell-penetrating peptides as antifungals towards Malassezia sympodialis. T. Holm, J. Bruchmann, A. Scheynius, Ü. Langel. Letters in Applied Microbiology DOI. 10.1111/j.1472-765X.2011.03168.x

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