

Medicinal honey kills MRSA

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Medicinal honey kills the bacteria that cause infections in wounds, such as the antibiotic-resistant MRSA. This has been ascertained by tests by Amsterdam and Wageningen researchers.

It has been known for some time that honey heals wounds through its antimicrobial effect. But the idea of adding biologically active molecules to the honey to speed up the healing process and combat wound infections more effectively is new. B-factory, a spin-off of Plant Research International (PRI), part of Wageningen UR, has been making medical products based on honey for several years. B-factory participated in a research programme by Amsterdam Medical Centre and PRI to further improve honey-bases ointments.

Amsterdam microbiologist Paul Kwakman researched the addition of certain antimicrobial peptides to honey. These sorts of molecules play a role in the [immune system](#) of plants and animals, because they can kill bacteria. Kwakman created an imitation of a human peptide and used it alongside a designed peptide. The latter was particularly effective in killing bacteria in the honey faster. 'That speed is important', says Kwakman. 'In a moist wound the honey could become so diluted that it no longer works. So the ointment has to work fast.'

The medicinal honey does not work as well as standard antibiotics, but does work against antibiotic-resistant bacteria such as [MRSA](#) and ESBL E.coli. 'More and more [bacteria](#) are developing resistance against more and more antibiotics', says Kwakman. 'That increasing resistance is a great concern. Honey could in future offer an alternative to [antibiotics](#)

for treating wounds.' B-factory cannot start using the enriched medicinal honey yet though. More research is needed before new medicines are approved.

Wageningen UR researcher Hans Helder sees a second route to producing improved medicinal honey. He caused a plant related to tobacco to produce a wound-healing peptide, human EGF, by building the relevant coding gene into the plant. This peptide got into the plant's nectar so that bees could turn the nectar into honey containing human EGF. Helder confirmed that the peptide really was present in the honey. 'The principle works', he says. The production is too low, however, for an effective honey-based ointment. Moreover, the risks associated with this gene technology product have not yet been researched.

Helder, Kwakman and B-factory published both studies this month in the scientific journals *Plant Biology* and *European Journal of Clinical Microbiology & Infectious Diseases*.

Provided by Wageningen University

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