Sweet success in hunt for honey's healing factor

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Comvita, the New Zealand-based global exporter of natural health and beauty products, and collaborators have identified key compounds in honey that stimulate the immune system, paving the way for a range of new wound-healing products.

The ground-breaking research, carried out at Industrial Research Ltd (IRL), Plant & Food Research and Massey University, found that different varieties of New Zealand honey appear to trigger different immune responses.

IRL's role was to provide its world-class expertise in the extraction, analysis, and purification of complex molecules that play an important role in biological systems.

Comvita's Chief Technology Officer Dr. Ralf Schlothauer says the research provides the tools for understanding why honey stimulates healing of stalled wounds.

"We know a lot about the anti-microbial properties of manuka honey but had much less scientific information about the immune system-related effects of honey in wound healing.

"The findings suggest there could be a number of honeys to consider if you want to stimulate the immune system. Ultimately, it might mean we produce medical honey products that are specifically tailored for certain treatments or that we select a range of honeys for their particular

properties to include in a specific blend."

Headquartered in Paengaroa in the Bay of Plenty, Comvita is the world's largest manufacturer and marketer of Manuka honey and produces natural health products for the wound care, health care, personal care and functional foods markets. It also produces Medihoney™ wound care products that are sold through a global licensing deal with US-based Derma Sciences.

Prior to the latest work, Dr. Schlothauer says published research had shown there were big carbohydrate molecules in honey that stimulated immune cells but their structure had not been analysed.

Comvita put two students, Swapna Gannabathula and Gregor Steinhorn, onto the task and their discoveries eventually led the company to Crown Research Institute IRL.

"We started separating the molecule but were puzzled about what it was. Initially we thought it was a glycan and sought appropriate analysis but they put us on to Dr. Ian Sims in the Carbohydrate Chemistry group at IRL, who is a leading expert in analysing complex molecules that play an important role in biological systems," says Dr. Schlothauer.

IRL has one of only three laboratories world-wide with the capability and expertise required to carry out complex research into the extraction, purification and analysis of oligo- and poly-saccharides, and glycoconjugates.

Dr. Sims began his work with small-scale analyses that were conducted on Manuka, Kanuka and Clover honeys. Starting with five grams of honey, separation of high molecular weight polymers from small sugars yielded just a few milligrams of sample for analysis.

After Dr Sims completed an initial, detailed analysis of the sugars Gregor Steinhorn, who now works full-time for Comvita, spent many hours purifying buckets of honey and identified its exact nature under the supervision of Dr. Sims and Dr. Alistair Carr (Massey University).

Comvita is determining the commercial value of this discovery and has a range of new products under development.

The findings from the research have been published in *Food Chemistry*, an international, peer-reviewed publication that reports on the chemistry and biochemistry of foods and raw materials.

Dr. Schlothauer says the next challenge is to better understand how and why honey promotes healing, with Comvita planning to do more research with the University of Auckland and IRL.

“The work is helping us ensure there is much better information about natural medicines,” says Dr. Schlothauer. "We need to be able to talk about the immune relevance of honey and have proof of its scientific efficacy to ensure natural medicines can sit alongside conventional health products.”

Provided by Industrial Research