

Continued from page 4



Some of the approximately 30 participants at the field day. Photos: Dr Linda Newstrom-Lloyd.

farmer Peter Hair and I spoke about the Trees for Bees project at an excellent Farm Forestry Field Day held near Gisborne on Sunday 12 August. We later visited a nearby demonstration farm where the Poverty Bay NBA Branch had planted two plots on Peter Hair's property as part of the Trees for

Bees project. It was an afternoon of good discussions between local beekeepers, interested parties and farmers.

Trees for Bees at Eastwoodhill Arboretum

Dr Linda Newstrom-Lloyd is soon to start work at Eastwoodhill Arboretum, searching among the 3500 species documented in the arboretum for trees that could well fit within the profile of Trees for Bees. Surely some gems are yet to be discovered. For example, it was mentioned at this Farm Forestry Field Day that sycamores have very high protein content in their pollen, yet they are deemed a weedy species largely because of wide and prolific seed dispersal. The curator of Eastwoodhill spoke about one species of sycamore at Eastwoodhill that does not

exhibit the traits of a weedy species. This is the sort of collaboration that can lead to significant benefits. I look forward to some exciting discoveries. See www.eastwoodhill.org.nz.



Left to right: Barry Foster, John McLean, Peter Hair, Dr Linda Newstrom-Lloyd, Paul Badger (beekeeper) and Meg Gaddum (farmer and QE 11 National Trust East Coast representative) at the demonstration farm at Patutahi. Photo: John McLean.

RESEARCH

Honey anti-inflammatory factor identified

By Professor Peter Molan, University of Waikato

Four different brands of honey wound dressings are now on sale internationally as registered medical devices, all made from manuka honey because of its well-established reputation as an antibacterial agent.

What is not so well known is that manuka honey also has a potent anti-inflammatory activity, and that this is very important in the treatment of wounds.

Inflammation in a wound prevents healing because it activates enzymes that digest the growth factors and tissue matrix, which are essential for tissue repair to occur.

Inflammation also makes wounds painful and causes the exudation of serum, which can be difficult to manage. Pharmaceutical anti-inflammatory agents cannot be used on wounds because they inhibit the healing process.

A large amount of evidence from clinical studies and research on laboratory animals demonstrates that honey has an anti-inflammatory activity on wounds. However, for the medical profession to accept the use of the anti-inflammatory properties of honey, the mechanism of action needs to be known. We investigated this with cultures of inflamed white blood cells as a model of inflammation in a wound. We found that honey suppressed the inflammatory process by inhibiting phagocytosis, which is the process of white blood cells engulfing bacteria and dead tissue to clear up infection and tissue damage. Phagocytosis is the start of a cascade of steps when inflammation is stimulated. Thus we established that honey suppresses the very first step in the process that gives rise to inflammation.

We found that manuka honey was much more effective than other types of honey in this action, also that there were large

differences in effectiveness between different batches of manuka honey. We found that this was not correlated with the level of non-peroxide antibacterial activity. By separating the components of manuka honey on chromatography columns and testing the isolated components, we were able to identify the component responsible for this activity. We found that it is a bee protein, Apalbumin-1. Because this bee protein can be expected to be present at about the same level in honey produced from all types of nectar, we had to explain why manuka honey had a much higher level of activity and why it varies from batch to batch. We found that Apalbumin-1 gets modified by reaction with methylglyoxal, which is present in large quantity only in manuka honey, and this modification makes the protein much more potently anti-inflammatory. These findings will allow wound dressings to be manufactured with the level of anti-inflammatory activity standardised as is currently done with their non-peroxide antibacterial activity.

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