

## MANUKA HONEY

Although honey has been used as a treatment for wounds for centuries, its antibacterial action could largely be accounted for by its extremely high concentration of the sugar fructose, which kills bacteria by desiccating them. However in recent years it has become clear that, in addition to its desiccant properties, manuka honey contains a specific antibacterial substance which can be useful medically. Work by the Honey Research Council and Waikato University has defined the antibacterial properties of manuka honey although the active substance was not identified at the time and was simply called “Unique Manuka Factor” or UMF.

Medical honey is graded by a UMF number, the higher the number, the better the activity. UMF 10 is generally regarded as the minimum for medical use. Supermarket honey is usually less than 5.

In the laboratory, UMF kills most of the organisms responsible for mastitis, especially *staphs* (including penicillin resistant strains) and *streps*. We quickly became interested to see if manuka honey worked as well in the cow as it does in the lab.

In 2003, Dexcel conducted a large scale trial on high cell count cows. Building on that, in 2004 and 2005 we selected a number of organic cows at DCRU with cell counts ranging from 350,000 to 3.5 million, treating them once daily for 4 - 6 days. Although our numbers were very small, our results were similar.

### Method of Application

The honey was supplied by Cambridge Bee Products pre-packed in 5ml syringes. A syringe was sealed in a zip-lock plastic bag and placed in warm water (warming being necessary to get the honey to run easily – even so, it was not that easy). The end of the teat to be treated was thoroughly cleaned using a swab soaked in methylated spirits.

Once warmed, a nozzle (Bovi-vet Syringe Mount, available from Shoof) was fitted to the syringe, the operator being careful to hold it in its little plastic sachet and not to touch the nozzle directly. After insertion into the teat, the honey was massaged well up into the udder and finally teat spray applied.

We had been told there may be a slight reaction to the honey (minor swelling of the teat, clots in the milk) due to its acidity but we did not observe this.

Milk was withheld during treatment and for 3 days afterward. Milk from the treated quarters was further withheld until an RMT indicated it was safe to go in the vat. Quarters that did not respond were either diverted to calf milk or dried off.

### Results

Of the 11 cows treated, cell counts from 8 showed a marked decline within 10 days of treatment. Cell counts from 5 of these rose again later in the season, indicating the response was only temporary, and 3 appeared to cure. Response was independent of the cell count at the start of treatment but a positive outcome seemed more likely with *Strep uberis* infections. Note again, the very small number of cows did not allow a proper statistical analysis!

### **Comment**

By attempting to cure high cell count cows, the honey was being given the toughest task. Our results were comparable to the sort of improvement that would be expected using antibiotics during lactation. Chronic mastitis infections may not respond well to antibiotics due to the organism being walled off in scar tissue and the propensity of some bacteria to hide away within the cells of the immune system. It seems reasonable to suppose the activity of manuka honey is limited by the same factors which limit the usefulness of antibiotics in these cases.

It thus seems the type of mastitis (both clinical and sub-clinical) most likely to respond well to manuka honey is that involving organisms that are not particularly tissue invasive. Most strains of *Strep uberis* and some *staphs* fall into this category. In a case of clinical mastitis involving significant udder swelling, indicating an invasive organism, concurrent treatment with an anti-inflammatory agent (such as Flunixin) to promote better penetration of UMF throughout the udder would be useful. However, cure rates in these cases are still likely to be relatively poor.

### **Dry Cow Therapy**

A Dexcel trial evaluating manuka honey's usefulness as a DCT had disappointing results, indicating its action in the udder is probably of quite short duration.