

## **COMING TOGETHER TO HEAL WOUNDS FASTER**

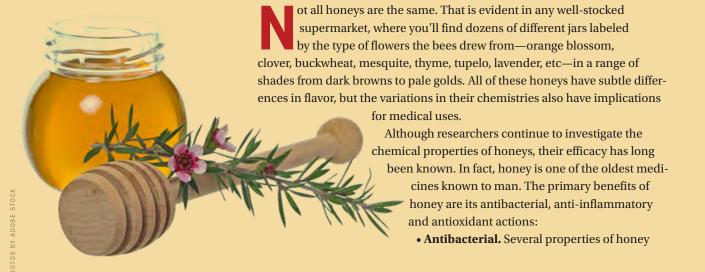
Silver Honey<sup>®</sup> is the first and only product line to use the unique combination of natural, medical-grade **Manuka Honey** and **MicroSilver BG**<sup>®</sup> to kill 99.9% of bacteria immediately so you can start healing your horse's wounds and skin conditions faster.



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help it kill bacteria. For one, it is acidic: Most honey varieties register between 3.5 and 4 on the pH scale. Animal tissues, in contrast, are slightly basic, with a normal pH in the range of around 7.4, and most bacteria found in wounds thrive best in a neutral to basic environment, with a pH of around 6 to 8. The honey, however, lowers the pH on the surface of the wound to a level that inhibits bacterial growth.

Also, honey is hygroscopic, which means that its sugars readily absorb moisture and will pull it from the surroundings. So honey will draw pus, waste products and other fluids out of the wound while keeping the exposed surfaces moist. This in turn encourages fresh lymphatic fluid to flow into the injured area. Most species of bacteria do not survive in this hygroscopic environment.

Honey produces hydrogen peroxide, a common disinfectant. As part of the honey-making process, bees secrete an enzyme called glucose oxidase into the honey. This enzyme remains stable in its original form in sealed, pure honey. However, once the honey is exposed to oxygen and water, a chemical reaction occurs that releases hydrogen peroxide.

Manuka honey inhibits the growth of bacteria on a wound's surface, and it can help draw pus, waste products and other fluids out of the wound while keeping the exposed surfaces moist.

"Hydrogen peroxide can give a high level of antibacterial activity in some honeys," says Peter Molan, PhD, of the University of Waikato in New Zealand, who has been investigating manuka honey since 1981, "but on an open wound a lot of that activity is lost as a result of destruction by an enzyme present in the cells of blood and wound tissues." That is, enzymes present in bodily fluids rapidly break down hydrogen peroxide.

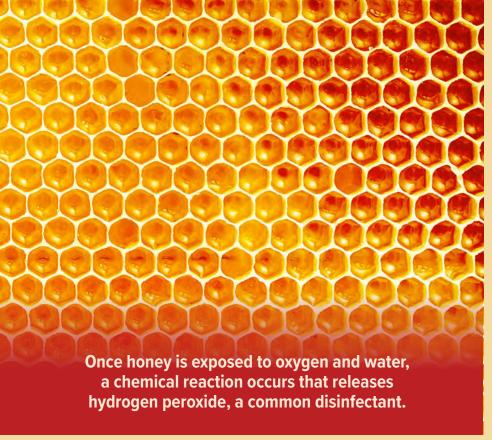
Some honeys, especially manuka,



also have non-peroxide activity (NPA), which means they retain antibacterial action even if their glucose oxidase/hydrogen peroxide activity is neutralized. Most of the NPA of manuka honey is due to high levels of another compound, methyglyoxal (MGO), as well as other chemical components that have not yet been identified.

- Anti-inflammatory. Although inflammation is a natural part of the body's response to illness or injury, if it becomes chronic it can stall healing. The MGO in honey, combined with another protein the bees secrete, acts on white blood cells in the tissue to produce an anti-inflammatory effect. This effect has been well documented in clinical trials. For example, people who receive radiation therapy for cancers of the head and neck often experience painful inflammation of the tissues inside the mouth. In one trial, 20 people were asked to hold pure honey in their mouths 15 minutes before, 15 minutes after and six hours after the radiation treatment. Only 20 percent of the honey-treated patients experienced significant inflammation, compared to 75 percent of 20 control patients not given honey.
- Antioxidant. Honey is rich in polyphenols, a class of chemical compounds with an antioxidant effect—that is, they

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tend to bind with potentially damaging reactive oxygen species (ROS), which are generated as a byproduct of inflammation. In wounds that become chronic, the normal inflammatory process that heals can generate too many ROS, which in turn stimulates additional inflammation, which can become constant and inhibit healing. Honey's antioxidant qualities can break that cycle and allow healing to proceed.

## What makes Manuka honey special

Just about any pure honey will have some medicinal effect from the acidity and hygroscopic action of the sugars. However, there can be big differences in the amount of the potentially beneficial compounds different varieties contain.

Manuka honey, made from nectars of *Leptospermum scoparium* (manuka) trees native to New Zealand and parts of Australia, has received the most research attention since Molan began investigating it in 1981. Manuka honey has been found to contain many times more polyphenols and MGOs than other varieties.

Due in part to Molan's research, Medihoney, the first commercial product approved by a regulatory authority, was released in Australia in 1999, and by 2008 a British company was distributing medical-grade honey products throughout Europe and other countries around the world. In 2007, the FDA approved Medihoney for sale as a medical device in the United States.

All of these products use medicalgrade manuka honey, which has been sterilized, is free of contaminants, and has guaranteed levels of therapeutic substances.

You can buy food-grade manuka

honey from a grocery store, and sometimes these products, too, are labeled for their biomedical potency—you may see labels that say "bio-active" or MGO plus a number. However, what is inside the jar doesn't always match what's on the label. Honey is a natural product, and unless they are sealed in greenhouses, bees don't always choose the expected flowers. Surveys have shown that some food honeys labeled as manuka may derive less than 70 percent of their content from actual manuka trees.

Contamination is another concern with supermarket honeys. When Patrick Pollock, MRCVS, DECVS, and a team of other researchers from the University of Glasgow in Scotland set out to investigate the antimicrobial properties of various honeys in 2013, they gathered 29 different types including commercial medical products as well as honeys purchased from supermarkets and directly from beekeepers. All were first cultured for contamination, and 18 were found to be positive for aerobic bacteria or fungi.

"We did this work because we were aware that horse owners might go out to the supermarket and buy honey to use on their horses, and we were concerned that this might not be safe," says Pollock. "Quite a lot were contaminated with bacteria. So it isn't safe to go to the supermarket and buy honey for wounds."



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