The Next Millennium: Consumers, Food And Health...
A Honey of An Opportunity

Dr. A. Elizabeth Sloan, President, Applied Biometrics, 10 Central Parkway, Suite 225, Stuart, FL 34994 U.S.A. Tel: 561-287-7252; Fax: 561-287-7178; E-mail: AppliedB@aol.com

The presence of essential vitamins and minerals in honey offers "added value" to both consumers and manufacturers ... and sets honey apart from most other *sweeteners.* Although present in relatively low amounts, honey contains a wide range of vitamins including B6, thiamin, niacin, riboflavin and pantothenic acid. Some forms of honey - such as mint honey - contain unusually high levels of vitamin C ... nearly 50% of the recommended daily level. Honey also has an unusually broad range of essential trace minerals: calcium, copper, iron, boron, zinc, sodium, potassium, phosphorus, manganese, magnesium and even fluoride. It also contains virtually all of the essential amino acids (18), the building blocks of protein, and our genetic material, DNA, although also at low levels. The presence of zinc makes honey appealing as the "sweetener of choice" for cold and sore throat products and lozenges. Not surprisingly, there is an explosion of such products in the market today. In addition, its vast complement of minerals - even at low levels - should make both athletes and heart-concerned individuals opt for honey over other sweeteners. Because of honey's unique combination of glucose and fructose, it is naturally suited to deliver long-term energy for endurance athletes.

Honey has significant *antioxidant activity.* Darker and higher water content honeys tend to be stronger antioxidants, while floral sources tend to be stronger than non-floral ones. Perhaps most interesting is a unique antioxidant compound found in honey and propolis (bee glue) ... pinocembrin. Pinocembrin levels approach 10% in propolis.

There is also evidence that honey is an appropriate sweetener for diabetics. Four studies have evaluated the effect of honey consumption in diabetics and found no detrimental effect. The number of diabetics in the U.S. has doubled since 1958 (16 million), suggesting an epidemic of diabetes in the next decade.

Honey's Antimicrobial Properties

Continuous testing and scientific evaluation over decades have provided *strong evidence* of honey's effectiveness as an *antimicrobial* and *wound healing* agent. Honey has been demonstrated to inhibit dreaded disease-causing bacteria ranging from those causing cholera and typhoid to some of today's most evasive pathogens, *E. coli* and S. *aureus.* It is important to note that various types of honey are more effective at inhibiting certain organisms. For example, manuka honey is a particularly strong inhibitor of *E. coli* and S. *aureus,* while clover honey has the highest general antibacterial potential overall. Propolis also has anti-viral and anti-inflammatory properties. Royal jelly also contains a potent antibacterial protein, "royalisin." Recently, several interesting compounds have been found in honey bees and honey bee products that exhibit antimicrobial properties: apidaecins and abaecins.

As a result of honey's antimicrobial activity, it is not surprising to find an abundance of evidence to support the *wound healing* properties of honey. First and foremost, the antibacterial and antifungal properties of honey prevent infection and promote accelerated wound healing and tissue formation. Honey has a deodorizing effect on wounds, rendering foul-smelling wounds odorless and sterile. Honey provides a viscous barrier to wound invasion and fluid loss. Honey dressings effectively serve as a non-stick covering that can be easily lifted from the surface of wounds without damaging regenerating tissues while creating the moist environment needed for optimal wound repair. Because honey can reduce the time for healing, it has important implications for post surgical treatment. A growing body of evidence suggests that topical application of honey facilitates minimal scarring in Caesarian sections and plastic surgery procedures. It may also perform similarly with burns. Honey dressings need to be changed less frequently. .. an important consideration in painful burn and bedsore applications.

There is significant evidence that honey is a superior (and cheaper) wound dressing for burns. Honey results are similar to the most common preparations, including silver sulfadiazine, and heal faster than a leading polyurethane film Op Site®.

One of honey's most important applications may be in treating *skin ulcers,* the most common chronic wound in America, with an estimated U.S. market opportunity exceeding $1 billion. Unfortunately, few studies have evaluated the effects of honey as a dressing for *pressure ulcers including bedsores,* another $1 billion+ opportunity.

Honey also inhibits *Candida ...* responsible for one of the most common vaginal yeast infections. Over 30 million men and women suffer every day from the discomfort of *Candida* yeast infections. Sales of Monistat 3 alone reached $50 million in the U.S.

Since the underlying cause of stomach ulcers (peptic ulcers) is a bacterial agent, *Helicobacter pylori,* studies suggest that honey may be an effective natural remedy. The stomach remedy market now totals $1.5 billion. Honey appears to be able to prevent *gastric lesions and diarrhea associated with excessive alcohol consumption.* Ingestion of honey or gastro-protective drugs 30 minutes prior to alcohol consumption prevent these complications.

Oral rehydration therapy has become a valuable method for treating diarrhea and is estimated to save one million lives worldwide annually. Honey appears to be effective in stemming the bacterial agents responsible for reducing diarrhea and killing the causative bacteria.

Although there are few studies on the use of local pollen honeys to prevent *hay fever,* it is a common practice. One tablespoon of honey a day is recommended three months prior to the onset of "hay fever season." A preliminary study from Salford University in Britain reported that 76% of their subjects "perceived the treatment as a great benefit."

Honey Bee venom has been shown in several well-designed studies to exhibit *anti-inflammatory and anti-arthritic activity and properties. Propolis also exhibits antimicrobial, antiviral, anti-protozoan* (Chagas Disease), *anti-inflammatory* and *immuno-modulatory* functions.

With the growing ineffectiveness of traditional antibiotics, consumers and pharmaceutical manufacturers alike are looking for more effective and more natural alternatives, particularly for treating *infections.* It is essential that these important pharmaceutical properties are communicated to key food, pharmaceutical and cosmetic manufacturers.