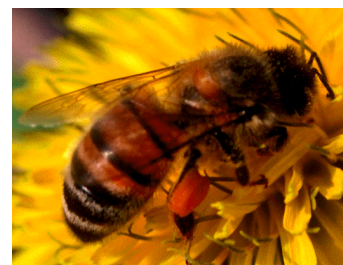




Symposium on Honey and Human Health

Sacramento, CA, January 8, 2008 – An international gathering of scientists convened in Sacramento, CA today at the First International Symposium on Honey and Human Health to review emerging findings on the potential role of honey in human health, including studies suggesting honey may play a favorable role in protection against chronic conditions such as diabetes, overweight and hypertension. New research explores the natural sweetener’s potential to improve chemotherapy-induced neutropenia, wound healing, restorative sleep, cough suppression, and cognitive function. “This exciting new area of research brings together

modern science and ancient traditional medicine regarding honey and health to support the many roles honey may play in human health,” says Ron Fessenden, MD, MPH, co-chairman of the Committee for the Promotion of Honey and Health. Dr. Fessenden added that “honey’s many benefits are interrelated, much like the cells of a honeycomb, and at the very least, there are no known medical reasons not to enjoy honey as part of a healthy diet and lifestyle for adults and children over the age of twelve months. The fact that modern science supports honey’s role in positive metabolic functions that address major health concerns is very



exciting.” [Excerpted from Official Press Release]

The Symposium attracted an audience of over 200, including several media representatives, members and officials of the beekeeping industry from the U.S and Canada as well as physicians and scientists. The complete Press Release and a full report of the Symposium is available at the Committee’s website, along with several Posters which were displayed at the Symposium. www.prohoneyandhealth.com.

Inside this issue:

| | |
|---|---|
| <i>Honey’s Role in Memory and Cognitive Enhancement</i> | 2 |
| <i>Better Sleep with Honey</i> | 2 |
| <i>Unexplained Immune System Enhancements</i> | 2 |
| <i>Honey may have a role in combating Insulin Resistance and Diabetes</i> | 3 |
| <i>Fighting Super Bugs with Honey</i> | 4 |
| <i>World Honey Market Report (Continued)</i> | 4 |

Preliminary results of animal and human studies indicates that the consumption of honey has been shown to :

- Lower blood glucose
- Lower HA1c levels
- Lower triglycerides
- Improve memory
- Decrease anxiety
- Enhance immune system responses

World Honey Market Report

Excerpts from a Report Delivered by Ron Phipps to the Canadian Honey Council

Calgary, Alberta, January 26, 2008. The first International Scientific Symposium on Honey and Health, held on January 8, 2008, was a success that exceeded all expectations. Scientists from Sweden,

Switzerland, Scotland, Australia, New Zealand, Israel, India and the U.S. Department of Agriculture presented important research indicating that honey may have importance for preventing several major

chronic and degenerative diseases and promoting positive health benefits relating to restorative health and cognitive functions. A very intriguing finding from Australia reports a significant reduction of (contd. on Page 4)

Does Honey have a role in memory, cognitive enhancement and anxiety reduction?

Of mice and men . . .



New Zealand study finds that honey may improve memory, enhance cognitive ability and reduce anxiety.

Dr. Nicola Starkey from the University of Waikato, New Zealand, delivered a fact filled, clinically relevant presentation to the Symposium. Dr. Starkey and her study group set out to investigate the effects of honey, sucrose, and a low glycemic index (GI) sugar-free diet on weight gain, behavioral (memory and anxiety) and biochemical measures in rats. Key findings from this year long observational study concluded that rats on the honey based diet showed

reduced weight gain and lower percentage body fat, decreased anxiety, better spatial recognition memory, improved HDL cholesterol, improved blood sugar levels (H_{A1c}), and reduced oxidative damage when compared to rats fed either the sucrose or sugar-free diet. Dr. Starkey noted that these observations were probably due to combined low GI and high antioxidant effects of honey.

In commenting as to whether or not the observations may apply to humans, Dr. Starkey

noted that different areas of the hippocampus mediate these behaviors in both animals and humans and this area is particularly susceptible to oxidative damage. The findings in their study were supported in other studies with antioxidant compounds. Dr. Starkey could not speculate as to dose and duration of exposure (consumption) required to see similar results in humans. She did however, state that the effects in rats were only observed after several months of being fed honey.

Better Sleep with Honey

“Honey is the best natural food to accomplish this liver fueling.” Mike McInnes, MRPS



“The Role of Honey in Restorative Sleep” was the title of a presentation by Mike McInnes, a pharmacist from Edinburgh, Scotland.

McInnes emphasized the need for proper fueling of the liver as central to optimal glucose metabolism during sleep. He stated that honey is the best natural food to accomplish this liver fueling due to the nearly 1:1 ratio of fructose to glucose found in honey. Fructose “unlocks” an enzyme from the hepatocyte nucleus that is necessary

for the incorporation of glucose into glycogen in the liver.

An adequate glycogen store in the liver is essential for brain fuel during the night fast. Without sufficient glycogen, the brain triggers the release of stress hormones – adrenalin and cortisol – in order to convert muscle protein into glucose. Repeated metabolic stress from cortisol when there are less than optimal liver glycogen stores during sleep, leads over time, to impaired

glucose metabolism, insulin resistance, diabetes and increased risk for cardiovascular disease, hypertension, obesity, osteoporosis, some forms of cancer, and several neurodegenerative conditions. All are conditions associated with increased oxidative stress. Honey before bedtime can prevent this from occurring and reduce the risk of these conditions related to metabolic stress.

Unexplained Immune System Enhancements with Honey

The effect of oral honey on the immune system was described in a paper submitted by Dr. Jamal Zidon, reporting on a study conducted in several hospitals in Israel on cancer patients. Patients with

acute febrile neutropenia (AFN) undergoing chemotherapy were given a teaspoon of honey for five days. 64% of the study group were observed to have a decreased incidence of AFN;

60% had a reduced need for Colony Stimulating Factor (CSF); and most showed increased neutrophil counts; decreased thrombocytopenia; and stabilized hemoglobin levels at > 11gm / dl. These

findings are consistent with other published reports citing the immune system enhancement effects of honey however no specific biochemical mechanisms were given to explain the results.

Honey may have a role in combating Diabetes and Insulin Resistance

Dr. David Baer, from the USDA Agriculture Research Service Beltsville Human Nutrition Research Center in a presentation entitled, "The Challenges of Insulin Resistance – Does Honey Have a Role?" outlined the history, diagnosis and prevalence of diabetes in the United States and around the world. In summarizing two significant research studies, one from 1985 and one from 2007 comparing the plasma glucose responses to the ingestion of honey, sucrose and glucose, Dr. Baer showed graphically that the body's

tolerance to honey is significantly better than to sucrose or glucose alone. Individuals with greater glucose intolerance (e.g. those with mild diabetes to Type 1 diabetes) showed significantly better tolerance to honey than to sucrose. In his summary, Dr. Baer said that "some clinical studies show improvement in gluco-regulatory control with honey compared to other carbohydrate sources (most notably glucose). Dr. Baer noted that diabetics generally have increased oxidative stress as the result of

increased oxidative damage of cellular DNA, lipids, and proteins. In addition, diabetics are prone to increased vascular damage and impaired vascular function. He stated that antioxidants may be beneficial for diabetics and help to improve endothelial function and vascular health. He concluded that the small amounts of antioxidants in honey may be beneficial in reducing oxidative stress, frequently by a larger factor than can be explained by the actual amount of measurable antioxidants found in honey.

"Experimental evidence suggests that consumption of honey compared to some other sweeteners may improve blood sugar control and insulin sensitivity." Dr. David Baer, USDA

Fighting Super Bugs with Honey

In her presentation entitled "The Grossly Underutilized Anti-microbial", Dr. Shona Blair from the University of Sydney, Australia, gave to honey the therapeutic challenge presented by "problematic pathogens" including several antibiotic resistant micro-organisms; 60 species of anaerobes; fungi (Candida and Tinea); and biofilms (microorganisms that secrete a slimy protective coating that makes them resistant to antibiotics).

Dr. Blair cited its low water activity, low pH, hydrogen peroxide generating capacity and other "floral factors" as the reasons for the antimicrobial activity of honey. Multiple varieties of honey were tested by Dr. Blair and her associates. Though there was wide variation among varieties as to their effectiveness as an

antimicrobial, within the honey used in this study, effective mean concentrations (MIC) of honey varied from 2 to 16% against the problematic pathogens studied. Sugar solutions used as controls required mean concentrations of > 20 to 45% to achieve the same in vitro effects.

In her concluding remarks, Dr. Blair stated that honey should be used as a "first choice", not as a "last resort" for dressings.

Honey is effective at low concentrations against a broad spectrum of bacteria, fungi, biofilm producing, and resistant organisms but the honey varietal is critical as antimicrobial properties can vary as much as 100 times from one varietal to the next. Honey provides excellent prophylaxis, stimulates healing (re-epithelialization)

and possesses ideal dressing properties. Honey is cost effective and most important of all "*Honey has no side effects!*"

[Editor's Note: After the Symposium, another report on the anti-infective properties of Manuka Honey was provided by Professor Thomas Henle, head of the Institute of Food Chemistry at the Technical University of Dresden. Dr. Henle, writing in **Molecular Nutrition and Food Research**, refers to the results of a Dresden study which "unambiguously demonstrates for the first time that methylglyoxal is directly responsible for the antibacterial activity of Manuka Honey." Researchers at the university analysed 40 samples of honey from various sources around the world, including six New Zealand manuka honeys. They found methylglyoxal



Blossoms from the Leptospermum plant, source for Manuka honey

levels in Manuka honeys were up to 1000-fold higher than non-manuka products. However, another study published in **Diabetes 2006** gives this caution: intracellular methylglyoxal "leads to an inhibition of insulin signaling." Thus "methylglyoxal may not only induce the debilitating complications of diabetes but may also contribute to the pathophysiology of diabetes in general." *It is imperative that differentiation be made among honey varieties when suggesting health benefits.*

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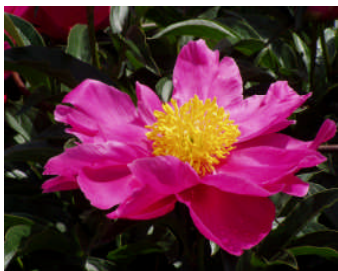
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This newsletter is made available at no charge to Members of the Committee for the Promotion of Honey and Health, Inc. The Committee depends on membership fees and contributions to carry out its mission which is to:

- 1. Create and promote a positive Honey and Health agenda that will result in greater consumer appreciation and demand for honey and enhance the already favorable image of honey by advancing sound scientific information that underscores its healthful benefits*
- 2. Support and promote the development of quality standards from within the industry, and promote an educational campaign that reinforces the need for good science to be applied in the promulgation and establishment of standards, including realistic tolerance and testing limits*

To join the Committee and support this initiative, please go to www.prohoneyandhealth.com and complete the application. All membership fees and contributions are tax deductible.



World Honey Market Report -

Continued from Page 1

anxiety of a controlled animal study.

When industries selling natural products can link a positive health message, such linkage can help transform an industry. An effective health message tends to have several effects: 1) consumption increases, 2) new products are introduced and developed, 3) reformulation of products occurs, 4) consumer perception of value increases, 5) new varieties and higher qualities enter the market, and 6) new entrepreneurial companies emerge responding to the health message.

The overriding goal for the

honey and health initiative is to use good science as a marketing tool which creates positive health messages for honey. We need to separate the wheat from the chaff and use science to confirm valid ancient intuitions regarding the healthfulness of honey. We have seen other industries such as the almond industry double and triple both consumption and prices on the basis of linking health and almonds. The American tea industry has grown from one billion to \$7 billion dollars in a little over a decade, largely influenced by the health message. The premises on which we formed the

Committee for the Promotion of Honey and Health, Inc were: 1) Good science begets good science; 2) Good publicity begets more publicity; 3) An effective and independent organization devoted to development of the honey and health message has the ability to integrate both science and publicity. This allows the message to penetrate to the grass root level, and 4) The health message, however intriguing and compelling it becomes, must also be embraced within the history and romance, quality and variety of honey.