

Natural hormone melatonin should be available in Canada

by Margaret Boyd
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There's no good reason why melatonin shouldn't be available in Canada, says Prof. George Bubenik, Zoology, who has been studying the natural hormone for more than 20 years.

Growing interest in melatonin is based on its wide-ranging healing properties. Studies have shown that it is a powerful antioxidant, slows the aging process and can safely be used as a natural sleeping pill. But sales of melatonin and melatonin derivatives are currently forbidden under law in Canada, although the hormone is available in health-food stores in the United States.

Can't be patented

Because melatonin is a natural hormone and can't be patented, drug companies have little interest in pursuing research into its healing properties, says Bubenik, one of a handful of Canadian researchers looking at melatonin. "It is very safe," he says. "It could be sold in a similar way to a vitamin."

Melatonin is a natural relaxant produced primarily in the pineal gland, but also in the retina and digestive tract. As an amino acid derivative, it is related to tryptophan and is a metabolite of serotonin, a powerful neural stimulator. Melatonin acts as a physiological inhibitor of serotonin, which is associated with negative effects on the gastrointestinal tract, the immune system and mental processes.

Bubenik's research, which is supported

by the Ontario Ministry of Agriculture, Food and Rural Affairs, indicates that melatonin has a beneficial effect on intestinal activity and epilepsy. In a study with graduate student Patricia Pentney, melatonin was found to eliminate colitis in mice after seven weeks of daily injections.

Preliminary data from the same study also show that melatonin and its derivatives slowed the growth of human colon cancer cells. Earlier studies confirmed that melatonin has a beneficial effect as an anticonvulsive drug, capable of blocking experimentally induced epilepsy.

"Melatonin relaxes the brain and calms the gastrointestinal system," Bubenik says.

The next step in the research is to determine why melatonin was so effective in treating colitis. "There are several possibilities," he says. "Melatonin boosts the immune system, it increases blood flow and it can stimulate the regeneration of the lining of the intestine."

Recently initiated nutritional studies will look at melatonin in relation to food-intake disorders such as obesity, anorexia and bulimia, as well as the seasonally affective disorder (SAD). For the study, pigs will be fed varying diets, and blood levels in the intestine will be measured to determine the influence of melatonin. Pigs are being used because their diet and intestinal activity is closely related to that of humans.

A preliminary study using pigs, conducted by Bubenik and Prof. Roger Hacker, Animal and Poultry Science, found that melatonin levels rise as food is

moving from the stomach to the intestine. Another study with Prof. Ron Ball, Animal and Poultry Science, found that in pigs, melatonin added to food reduced the incidence of gastric ulcers by one-third.

Work on this study and earlier ones on melatonin have been conducted in conjunction with the Clarke Institute of Psychiatry in Toronto and the University of Hong Kong.

Powerful detoxificant

Bubenik would like to see more research done in Canada to determine other beneficial uses of melatonin. U.S. studies, for example, have shown melatonin to be a powerful detoxificant of noxious chemicals in the brain and to provide protection against the effects of radiation. In the future, it could be used to treat health disorders ranging from migraines to infant colic, he says.

As a three-billion-year-old molecule, melatonin is the oldest known hormone and is present in plant and animal species. Because blood levels of melatonin rise rapidly at the onset of darkness, it became a convenient signal for the recognition of time and seasonal change during evolution.

In humans, who are mostly diurnal, melatonin causes lower body temperature, drowsiness and relaxation of smooth muscles. Melatonin production peaks at age one, drops sharply until puberty, when it stabilizes, then decreases with age. Z