

Hops compound may offset obesity's risks

By GAIL OBERST
For the Capital Press

Oregon State University researchers have developed derivatives of xanthohumol, a compound that occurs naturally in the hop plant, and can combat metabolic syndrome in obese mice, and some day, humans.

The syndrome is caused by a high-fat diet and impacts nearly 25 percent of U.S. adults, causing high blood pressure, inflammation and insulin resistance, putting them at risk of heart disease and diabetes, to name a few health problems.

The new discovery, published in January, may solve many health problems, and if it is developed, may also offer a new market for the world's hop growers, including those in the Northwest.

"We're really excited about this," said Cristobal Miranda, a research associate professor at OSU's Linus Pauling Institute. Miranda, with Fred Stevens and 18 other national and international authors, released their latest findings in *Scientific Reports*, a research journal.

The latest research indicates that hydrogenated derivatives of xanthohumol have greater potency than xanthohumol itself in lowering body weight gain and reducing insulin resistance in obese mice.

But beer and xanthohumol part ways at the cone. Xanthohumol is a highly purified ingredient unique to hops, and is found in most hop-

py beers. However, a person would have to drink 3,500 beers daily for the same benefit presumed from a 175 mg tablet of xanthohumol, the estimated human dosage to battle symptoms of metabolic syndrome. Even if the beers could be consumed, the newly isolated derivatives are free of estrogenic properties that have been associated with xanthohumol consumption.

Don't go looking for the derivatives in your natural food stores or pharmacies just yet. Although research on mice and rats — and some human tests — are compelling, the federally required human trials are still in the wings. Stevens and Miranda are hoping to complete trials as soon as funds are available.

The findings were no accident. Discovery of the hop derivatives' health properties culminates research that spans decades. Miranda and Stevens have published 24 scientific papers together, most detailing their hops research. Testing the derivatives of xanthohumol was the final step in demonstrating their beneficial health effects without the problematic adverse effects of estrogen in hops.

"We've finally fixed that aberration," Stevens said.

Meanwhile, the infrastructure for processing the derivatives is already in place. Northwest and German and laboratories, some connected to beer production and others to health research, already process xanthohumol. Xanthohumol has long been

part of pre-clinical and clinical testing at OSU and Oregon Health and Science University.

Hopsteiner, a hop grower, global distributor and processor with locations including Yakima, Wash., provided purified xanthohumol for the study.

It is both a blessing and a curse that xanthohumol and its potential for saving lives is found in hops, Stevens indicated.

It is a blessing because it is readily and plentifully available from a natural source, and a curse for the same reason.

In the U.S., natural products are often not taken as seriously as artificial, lab-produced chemicals.

But Stevens and Miranda are hoping some enlightened investor or sponsor will see the value of supporting human trials and bringing this supplement to the public. Tests on rodents were clear: According to their latest research on mice, a single supplement taken once a day may be able to prevent cardiovascular disease, obesity and Type 2 diabetes caused by high fat diets, without estrogen side effects or liver damage. Obesity and related disorders account for up to 21 percent of the money spent on U.S. health care — \$190.2 billion — according to a 2012 study published in the *Journal of Health and Economics*.

"This is the first time we've seen one compound with the potential to address so many health problems," said Miranda.



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Fred Stevens, of Oregon State University's Linus Pauling Institute, is among the researchers who claim that xanthohumol, an ingredient in hops, can cure metabolic syndrome, a deadly condition caused by high-fat diets.

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