Why do flies enjoy beer as much as the rest of us?

By James Maynard, Tech Times | October 10, 9:35 PM

Flies are attracted to beer in much the same way as lovers of the brew are, and now scientists know why the flying insects are drawn toward the human refreshment.

Beer yeasts produce chemicals that mimic the smells of fruits, in order to attract flies. Once the insects land on yeast cells in the wild, the tiny organisms often become stuck to the body of the fly, and are transported to other locations, where they can spread, find new food sources, and multiply.

The volatile chemicals that attract flies are released during fermentation, adding distinct flavors and underlying notes to the tastes of beer and wine.

"The importance of yeast in beer brewing has long been underestimated. But recent research shows that the choice of a particular yeast strain or variety explains differences in taste between different beers and wines. In fact, yeasts may even be responsible for much of the 'terror'—the connection between a particular growing area and wine flavor, which previously often was attributed to differences in the soil," Kevin Verstrepen of the Flanders Institute for Biotechnology (VIB) said.

Yeast has been used by humans for thousands of years in the creation of beer, wine, and bread. The microorganisms consume sugars, releasing carbon dioxide and alcohol as by-products. In beer production, alcohol adds to the kick of the beverage, while the gas produces bubbles. Wine manufacture retains alcohol, while allowing carbon dioxide to escape. Bakers utilize the gas to "raise" bread dough, while the intoxicating by-product evaporates during baking.

Volatile chemicals with fruity odors are also produced during this process, and an international team of researchers set out to discover what purpose they could serve for yeast. A single gene in the micro-organisms called ATF1 was found to manage all aroma production by beer yeast. When this gene was shut off in the microscopic organisms, flies were no longer attracted to the sample.

"We all know that flowers attract insects by producing aromas. But there’s also a lot of microbes living inside flowers, and the chemicals they produce may also play an important role," Joaquin Christianen from VIB stated in a press release.

This discovery was inspired by a laboratory accident which happened 15 years ago, when Verstrepen was studying the gene in yeasts which control the production of aromatic molecules. One Friday night, he left his lab without properly cleaning up his experiment. Inside the laboratory were three flasks, each containing yeasts producing different amounts of the aromatic substances. When the researcher returned on Monday, he found flies had entered the lab over the weekend, and most drowned in the flask giving off the greatest concentrations of the chemicals.

"You don’t have to be a genius to start to draw some conclusions from that," Verstrepen told the press.

Investigation of the role played by chemicals by beer yeast to attract flies was published in the journal Cell Reports.
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