Heat forms potentially harmful substance in high-fructose corn syrup

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A new study shows that heat can produce a potentially toxic substance in high-fructose corn syrup that can kill honeybees and may also threaten human health. Credit: Wikimedia Commons

Researchers have established the conditions that foster formation of potentially dangerous levels of a toxic substance in the high-fructose corn syrup (HFCS) often fed to honey bees. Their study, which appears in ACS' bi-weekly *Journal of Agricultural and Food Chemistry*, could also help keep the substance out of soft drinks and dozens of other human foods that contain HFCS. The substance, hydroxymethylfurfural (HMF), forms mainly from heating fructose.

In the new study, Blaise LeBlanc and Gillian Eggleston and colleagues note HFCS's ubiquitous usage as a sweetener in beverages and processed

foods. Some commercial beekeepers also feed it to bees to increase reproduction and honey production. When exposed to warm temperatures, HFCS can form HMF and kill honeybees. Some researchers believe that HMF may be a factor in Colony Collapse Disorder, a mysterious disease that has killed at least one-third of the honeybee population in the United States.

The scientists measured levels of HMF in HFCS products from different manufacturers over a period of 35 days at different temperatures. As temperatures rose, levels of HMF increased steadily. Levels jumped dramatically at about 120 degrees Fahrenheit. "The data are important for commercial beekeepers, for manufacturers of HFCS, and for purposes of food storage. Because HFCS is incorporated as a sweetener in many processed foods, the data from this study are important for human health as well," the report states. It adds that studies have linked HMF to DNA damage in humans. In addition, HMF breaks down in the body to other substances potentially more harmful than HMF.

More information: "Formation of Hydroxymethylfurfural in Domestic High-Fructose Corn Syrup and Its Toxicity to the Honey Bee (Apis mellifera)", Journal of Agricultural and Food Chemistry

Source: American Chemical Society (news : web)