

INSIDE JEB

Tropical stingless bees don't react to caffeine



Bees are hectic at the best of times, scurrying around caring for brood and searching for nutritious nectar. It also turns out that – like humans – some are partial to a shot of caffeine. ‘Caffeine is a secondary plant metabolite found in some nectars’, says Tianfei Peng, of Johannes-Gutenberg University of Mainz, Germany, explaining that the stimulant definitely affects European honey bees (*Apis mellifera*); they forage more, drink more nectar, have better memories and are naturally attracted to poor-quality flowers, potentially at the colony’s expense. But how does the caffeine-laced nectar produced by the trees that grow our daily brew affect the tropical species of stingless bee that pollinate them?

Teaming up with colleagues from his own institute, the Universidade de São Paulo, Brazil, and from Goethe University of Frankfurt, Germany, Peng trained wild Brazilian *Plebeia droryana* to dine at feeders dosed with either a weak or a strong sugar solution and compared how the bees responded to the fake nectar when they added a small or large shot of caffeine. Remarkably, the bees weren’t bothered; they were equally keen to forage at the feeders regardless of whether they were getting a caffeine hit. However, they were definitely more enthusiastic when Peng increased the sugar concentration in the fake nectar, buzzing more around the feeder with the stronger of the two simulated nectar solutions. So, it seems

that *P. droryana* are not susceptible to the highly charged effects of caffeine, but they are motivated by the quality of the nectar that they sip, and the team suspects that the busy South American insects may have become immune to the stimulant or simply lack the wiring that makes other bees sensitive to one of our favourite refreshments.

10.1242/jeb.206441

Peng, T., Segers, F. H. I. D., Nascimento, F. and Grüter, C. (2019). Resource profitability, but not caffeine, affects individual and collective foraging in the stingless bee *Plebeia droryana*. *J. Exp. Biol.* **222**, jeb195503. doi:10.1242/jeb.195503

Kathryn Knight
kathryn.knight@biologists.com