

Ants found to use multiple antibiotics as weed killers

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Scientists at the University of East Anglia, have shown that fungus-farming ants are using multiple antibiotics as weed killers to maintain their fungus gardens.

Research led by Dr Matt Hutchings and published today in the journal *BMC Biology* shows that ants use the [antibiotics](#) to inhibit the growth of unwanted fungi and bacteria in their fungus cultures which they use to feed their larvae and queen.

These antibiotics are produced by actinomycete bacteria that live on the ants in a mutual symbiosis.

Although these ants have been studied for more than 100 years this is the first demonstration that a single [ant colony](#) uses multiple antibiotics and is reminiscent of the use of multidrug therapy to treat infections in humans.

The work, which was funded by the UK Medical Research Council, has also identified a new antibiotic that could be used to treat fungal infections.

Fungiculture in the insect world is practiced by ants, termites, beetles and gall midges.

Dr Hutchings' research investigates the *Acromyrmex octospinosus* leaf cutter ant, endemic in South and Central America and the southern US.

These ants form the largest and most complex animal societies on earth with colonies of up to several million individuals. The garden worker ants researched were collected from three colonies in Trinidad and Tobago.

Dr Hutchings said: "This was really a fun project which started with a PhD student, Joerg Barke, streaking leaf-cutting ants onto agar plates to isolate antibiotic producing bacteria.

"We found a new antifungal compound that is related to a clinically important antifungal named nystatin so we're excited about the potential of these ants and other insects to provide us with new antibiotics for medical use.

"It's also very exciting that [ants](#) not only evolved agriculture before humans but also combination therapy with natural antibiotics. Humans are just starting to realise that this is one way to slow down the rise of [drug resistant bacteria](#) - the so called superbugs.

"Joerg, with his colleagues Ryan Seipke and Sabine Gruschow, really pushed this project forwards and made these major discoveries. They really deserve most of the credit for this work," he added.

More information: The paper, entitled 'A mixed community of actinomycetes produce multiple antibiotics for the fungus farming ant *Acromyrmex octospinosus*' is published in *BMC Biology*.

Provided by University of East Anglia

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