
European Meeting of the International Union for the Study of Social Insects



Endosymbionts *Blochmannia* improve colony growth and immune defence in the ant *Camponotus fellah*

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All Carpenter ants (genus *Camponotus*) studied hitherto harbour primary endosymbiotic bacteria from *Blochmannia* genus. The role of bacteria in ant nutrition was demonstrated [1] but the omnivorous diet of these ants lead us to hypothesize that the bacteria might improve additional advantages to their host. We intended to establish links among *Blochmannia*, growth of starting new colonies and the host immune response.

We manipulated the number of bacterial endosymbionts in incipient laboratory-reared colonies of *Camponotus fellah* by administrating doses of an antibiotic (Rifampin) mixed in honey-solution. The treatment efficacy was estimated by quantitative polymerase chain reaction and Fluorescent in situ hybridization (FISH), with primers specific for *Blochmannia* species and two fluorescent probes (one for all Eubacteria and another specific for *Blochmannia*). Incipient colonies treated with Rifampin had lower numbers of brood and adult workers than control colonies. The immune response of ants from control and treated colonies was estimated by inserting nylon bead in the gaster and removing it after 24h. In the control colonies, the encapsulation response was positively correlated to the bacteria amount, but no correlation was verified in treated colonies. Indeed, the antibiotic treatment increased the encapsulation response of the workers, probably a response to stress conditions. The increase growth's rate of non-treated colonies confirms the importance of *Blochmannia* in this phase of colony development. This would provide an important selective advantage during colony founding, where the colonies are faced to severe inter and intraspecific competition. Furthermore, the bacteria improve the workers encapsulation response. Thus, these ants would be less susceptible to parasitoid attack, as that of Phoridae fly, normally found in the vicinity of *Camponotus* nests. These advantages might explain the ecological success of this ant genus, comprising ~1000 species.

1. Feldhaar H. et al. 2007. BMC Biol. 5: 48.