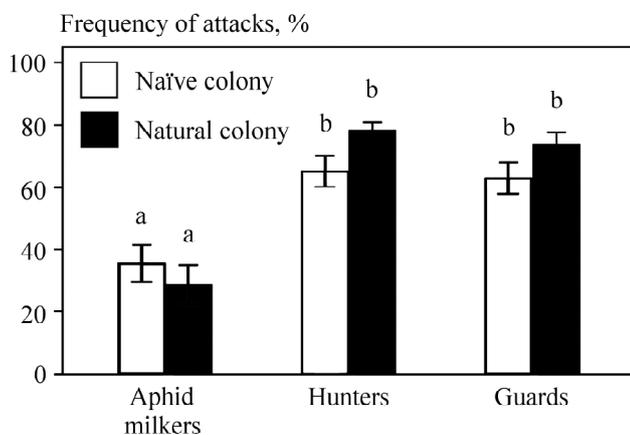


Abstract*

Early task specialization in red wood ants

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In order to reveal behavioural features which take precedence of the task specialization in red wood ants *Formica aquilonia* (REZNIKOVA 2011) we presented ant groups with a battery of behavioural tests: (1) artificial “piece of world” including “grass”, shelters and a “tree trunk”; (2) collisions with a competitor for space (a ground beetle of the genus *Pterostichus*) (DOROSHEVA *et al.* 2011); (3) collisions with a “predator” (a moving dummy blue tit *Parus major*) (HAEMIG 1999); (4) an enemy possessing specific chemical protection (alive larva of Syrphidae fly). Comparison of reactions of naïve laboratory-reared ants of different age with those of mature „specialists” (aphid milkers, guards and hunters) taken from a natural ant colony enabled us to suggest that task specialization in red wood ants are based on innate behavioural differences between workers displaying in 4-5 weeks of age (Fig. 1). Workers with weak aggressiveness which are able to learn how to avoid dangerous situations become aphid milkers, whereas highly aggressive ants which are not inclined to avoid danger specialize in guarding and hunting. It definitely requires experience for ants to select key features and grasp significant details in order to interpret the whole image of potential competitors and enemies and elaborate specific tactics of inter-relations with them. Members of different task groups also differ in their exploratory reactions to pieces of “artificial world”. The work was supported by the grant of scientific cooperation between Hungarian and Russian Academies of Sciences.



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Fig. 1. Differences in level of ant's aggressiveness towards a ground beetle between three task groups of workers (aphid milkers, hunters and guards) taken from natural and naïve colonies. Error bars are one standard error. Different letters indicate significant differences among the groups ($p < 0.001$, Student's *t*-test with Bonferroni correction).

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