

Abstract

The coexistence of humans and rodents lasts from the beginnings of the history of agriculture. Many rodent populations accepted to synanthropic way of life and as commensals accompany human societies until today.

In the first study we wanted to find out, how the evolution of non-commensal rodent species, a Cypriot mouse (*Mus cypriacus*), was influenced by people. This endemic island species evolved on the Cyprus Island without presence of any mammalian competitors or predators. In last 10.000 years humans arrived on the island, bringing several mammalian species, which affected the environment markedly. A black rat (*Rattus rattus*) is now dominant species there and presumably it is an important competitor for the Cypriot mouse. We supposed that the mice should avoid its odour. Nevertheless the rats odour was preferred by the mouse, probably as an odour of phylogenetically related species. On the contrary, the odour of domestic cat (species, which is also widespread on the island), was avoided. In conclusion, the long-term isolation from mammalian predators did not affect the antipredatory reactions of the Cypriot mouse.

Our next study was focus on changes in behavioural strategies of different populations of mice: the main question was how the commensal way of life affects their exploratory behaviour. For assessing the effect of commensalism we compared non-commensal population of *M. musculus musculus* with commensal one of the same species (*M. m. musculus*). To determine the effect of subspecies we used non-commensal population of *M. m. domesticus* for comparison. In commensal mice level of their vertical activity was increased. It suggests that the selection pressures of commensal way of life favour mice with higher affinity towards vertical dimension and elevated places. In comparison with *M. m. musculus* the *M. m. domesticus* subspecies was more active, exhibiting elements of behaviour, which are connected to boldness.

The final part of our work investigates an applicability of non-toxic monitoring bait containing fluorescent pigment. All three tested rodent species (*M. musculus domesticus*, *Rattus norvegicus*, *R. rattus*) accepted the bait and produced sufficient amount of UV-visible faecal pellets. The detectability of these pellets was very high (98 % when using the UV flashlight). Also the fluorescent pigment contained in faeces prevents human observers from false positives recordings. Thus, the bait is useful tool for monitoring activity of rodents in the field.