

DEVELOPMENTAL CHANGE OF FATTY ACID COMPOSITION IN DRONE BROOD OF HONEYBEES (*APIS MELLIFERA*)

Gintautas Juozas Švirmickas¹, Violeta Razmaitė¹, Vidmantas Pileckas^{1,2}

¹*Institute of Animal Science, Lithuanian University of Health Sciences*

R. Žebenkos 12, LT-82317 Baisogala, Radviliškis District., Lithuania; E-mail: g.svirmickas@lgi.lt

²*Šiauliai University; P. Višinskio 19, LT-77156, Šiauliai, Lithuania; E-mail: vidmantaspileckas@gmail.com*

Abstract. The aim of this study was to characterize the developmental change of fatty acid composition during the drone larvae growth from the second day to the stage of capped cells. Special frames were used for drone brood raise. When a part of drone brood cells were capped, the frames were removed from the hives. The age of drone brood was estimated and samples of drone larvae aged 2, 3, 4, and 6 days were collected before cell capping and from capped cells for fatty acid detection. Each sample contained 4–6 g of larval bodies. A total number of 19 fatty acids were in the drone brood. The lipids of the drone brood are rich in saturated and monounsaturated fatty acids containing 97.27–98.87% of the total content of fatty acids at different developmental stages. The polyunsaturated fatty acids were minor components (1.13–2.73 %). During the developmental growth of larvae, the content of saturated fatty acids increased, however, the content of monounsaturated fatty acids decreased. Of the separate fatty acids, monounsaturated oleic (C18:1n-9) and saturated palmitic (C16:0) fatty acids were found to be the dominant in the drone larvae sampled. However their contents, respectively, were decreasing and increasing during the larvae developmental growth and reached their peaks before the cells were capped. Although the content of polyunsaturated fatty acids was low, the ratio of polyunsaturated fatty acids n-6/n-3 demonstrated that the drone brood lipids are rich in n-3 polyunsaturated fatty acids.

Keywords: fatty acids, developmental change, brood, drone, honeybee.