

Africanized honey bees more efficiently convert protein diets into hemolymph protein than do Carniolan bees (*Apis mellifera carnica*)

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ABSTRACT. The superiority of Africanized over European honey bees in tropical and subtropical regions of the New World is both well documented and poorly understood. As part of an effort to try to understand the process by which the displacement of European bees occurred, we examined the ability of these two types of bees and of hybrids between the two to convert natural and artificial diets into usable protein. Newly emerged bees from colonies of tropically adapted Africanized and temperate-origin Carniolan bees and first-generation hybrids between the two were caged and fed artificial and natural protein diets for six days to determine whether there were differences in their ability to use these diets. The Africanized bees developed significantly higher protein levels in the hemolymph

than did the Carniolan bees. The difference was 31% when the bees were fed bee bread (37.5 and 28.56 μg protein/ μL hemolymph, respectively). The hybrids developed protein levels intermediate between the two parental types. These were approximately 10 times the levels found in bees fed with sucrose alone. Superior food conversion efficiency of the Africanized bees may be one of the reasons for their superiority both in the wild and for beekeeping in tropical and subtropical Latin America.

Key words: *Apis mellifera*; Africanized; Protein diets; Bradford; Bee nutrition