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Pollen nutrition on honeybee (Apis mellifera L.) health

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The environmental nutrients available to honeybees are essential to their development and survival. Pollen is the main source of protein for honeybees, and its quality and digestibility are important factors for bee health. We have compared the effect of fourteen different mixed pollen diets on the development and survival of caged adults and larvae. In the adult queenless workers, mixtures containing Asteraceae as the main pollen type provoked more mortality, maybe due to its morphology that causes low digestibility. On the other hand, bees fed diet with Myrtaceae and Moraceae as the most abundant pollen type showed higher survival rates, suggesting that these pollen types offer better digestibility and nutritional assimilation to the bees. Ovary activation was also investigated and all pollen diets promoted ovary activation in the queenless workers. Although bees fed on diets with higher protein content accumulated Vitelogenin and Hexamerin at higher levels, they did not show higher rates of ovary activation, suggesting that ovary activation may depend on other nutrients present on the pollen such as lipids and carbohydrates. Larvae reared in vitro on distinct dietary regimes did not show clear changes in their survival or development as observed in adults. Nonetheless, more mortality and delay in development were observed in larvae fed diet with Asteraceae as the main pollen type. On the other hand, Cyperaceae pollen type was the most appropriate for larval development. Our results support the idea that quality and morphology of the pollen grains may be detrimental to bee health. Financial Support: FAPEMIG, CNPq