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Extracellular activity of NBAD-synthase is responsible for colouration of brown spots in *Ceratitis capitata* wings

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Running head: Brown wing spots tanning in absence of cells

KEY WORDS: Diptera, N-beta-alanyldopamine, N-beta-alanyldopamine-synthase, sclerotization, tanning, wings.

Abstract

After the emergence of the *Ceratitis capitata* imago, the pale and folded wings are expanded and sclerotized to acquire the definitive form and to stabilize the cuticle. The wings of this fly show a specific pattern of brownish and black spots. Black spots are pigmented by melanin, whereas there was scarce information about the development of the brownish spots. N-beta-alanyldopamine (NBAD) is the main tanning precursor in *C. capitata* body cuticle, and we hypothesized that it may be responsible for the colouration of the brownish spots. We determined the topology and timing of NBAD synthesis and

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