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

**Martín M. Pérez[1,2], Pablo A. Bochicchio[1,2], Alejandro Rabossi[1,2]* and Luis A. Quesada-Allué[1,2,3]***

[1]IIBBA-CONICET, [2]Fundación Instituto Leloir, and [3]Departamento de Química Biológica, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Av. Patricias Argentinas 435 (1405), Buenos Aires, Argentina.

***Co-corresponding authors:** E-mail: lualque@iib.uba.ar, arabossi@leloir.org.ar

**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-alanydopamine (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