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Title:	Adult immunocompetence against infection by Enterococcus faecalis and larval phenol-oxidase activity in the population of Drosophila melanogaster adapted to larval crowding
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Abstract:	<p>The environment experienced by an organism during their juvenile stages is known to impact their adult stage. In holometabolous insects like the model organism of this study, <i>Drosophila melanogaster</i>, most of the resource acquisition happens during the larval stages. Larval crowding is a condition in which larvae are exposed to an environment which has scarcity of food and high amount of accumulated toxic waste. As adult traits are affected by the developmental environment during larval stages, in larval crowding like conditions, adult traits are prone to get affected. Though, the effect of scarcity of nutrition and poor developmental environment on adult immune response has been studied extensively, the effect of adaption to larval crowding like conditions has not been studied, therefore this study investigates the evolution of ability to survive infection in adult stage as a correlated response to adaptation to larval crowding environments. Using four populations of <i>Drosophila melanogaster</i> adapted to larval crowding for more than 250 generations and their respective control populations, this study shows that there is no difference between populations adapted to larval crowding and their respective controls in post infection survivability against infection by a gram-positive bacteria <i>Enterococcus faecalis</i>. Therefore, the results suggest that adaptation to larval crowding has no effect on adult immunocompetence measured in terms of survivorship post infection against <i>Enterococcus faecalis</i>. In the latter part of the study Phenol-oxidase (PO) activity levels of the populations adapted to larval crowding and their respective controls were compared as various studies have used PO activity as an immune measure to determine the degree of immunocompetence of an organism. The data till now reports that a significant difference in PO activity is present between the selected and control population. This result in turn suggests that PO activity cannot be used as a general immune measure to determine the degree of immunocompetence of an organism.</p>
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