

## Abstract

The effects of olive leaf extract (OLE) are studied on several reproductive variables and the ovarian biochemical composition of *Locusta migratoria* (Orthoptera: Acrididae) adult females. The methanolic extracts are prepared from the leaves sampled during four phenological growth stages of olive tree: cluster formation (Cf), swelling inflorescence buds (Sib), full flowering (Ff) and endocarp hardening (Eh). When applied to adult females during the pre-ovipositional phase, the treatment elicits a significant adverse effect on their reproductive potential. Indeed, OLE significantly reduces both fecundity and fertility and affects oocyte growth during the first gonadotrophic cycle, as indicated by measurements of ovarian weight, length of terminal oocytes and ovarian index. Furthermore, OLE is examined with respect to ovarian biochemical components. Biochemical analyses reveal a significant reduction of ovarian contents of proteins, lipids and carbohydrates, suggesting a disruption in the incorporation of the haemolymph metabolites in the oocytes and an interference of OLE with the vitellogenesis process. The antigonadotrophic effect is confirmed by a histological study of the ovaries, which clearly shows a delay in ovarian development and in yolk accumulation in the basal oocytes of treated females. The most effect is noted with the extract prepared from the leaves collected at the swelling inflorescence buds for all measured parameters, which appears to be related to its high content of polyphenols.