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OVICIDAL ACTIVITY OF VARIOUS ESSENTIAL OILS AGAINST CONFUSED FLOUR BEETLE, *Tribolium confusum* Jacquelin duVal, (Coleoptera: Tenebrionidae).

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In this study, the ovicidal activity of vapours of essential oils from laurel (*Laurus nobilis*), fennel (*Foeniculum vulgare*), oregano (*Origanum dubium*), onion (*Allium sepa*), yarrow (*Achillea millefolium*), pepermint (*Mentha piperita*), juniper berry (*Abies balsamea)*, eucalyptus (*Eucalyptus globulus*), fir needle (*Juniperus communis*), garlic (*Allium sativum*), nutmeg (*Myristica fragrans*), citronella (*Cymbopogon winterianus*), pine (*Pinus sylvestris*), anise (*Pimpinella anisom*), rosemary (*Rosmarinus officinalis*), turmeric (*Curcuma longa*) were evaluated against eggs of confused flour beetle (*Tribolium confusum* Jacquelin duVal). A dose of 100 μL/L air of all essential oils were exposed to the eggs of *T. confusum* for exposure periods of 24, 48 and 72-h. Vapours of laurel, yarrow, peppermint, juniper berry, eucalyptus, fir needle, nutmeg, citronella, pine, rosemary and tumeric essential oils were found to have a low ovicidal toxicity to eggs of *T. confusum* at all exposure times by <20% of corrected mortality. Whereas, garlic, onion, fennel, anise and oregano essential oils indicated a strong ovicidal activity by varying from 42.2% to 100% of corrected mortality at 24-h exposure time. Probit analysis data on eggs of *T. confusum* resulted in LT_{90} values of 1.1, 22.1, 22.4, 13.8 and 51.1-h at a dose of 100 μL/L air for garlic, onion, anise, oregano and fennel respectively. On the basis of LT_{90} values, toxicity of vapours of essential oils to eggs of *T. confusum* in descending order was: garlic < oregano < onion < anise < fennel. Essential oil from garlic with 0.12 g h/L of Ct product was found to be the most promising one by a closer Ct product value to the most commonly used commercial fumigant, methyl bromide (0.05 g h/L).

Key words: Essential oils, ovicidal activity, egg, fumigant toxicity, *Tribolium confusum*, bio-fumigant