

## Abstract

In this study, the fumigant toxicity and repellent activity of essential oil of *Juniperus polycarpus* and *Juniperus sabina* were investigated against two stored product insect species *Tribolium confusum* and *Ephesia kuehniella* at  $27 \pm 1^\circ\text{C}$ ,  $65 \pm 5\% \text{RH}$  under dark condition. Results showed that essential oil of *J. sabina* ( $\text{LC}_{50}$  301.94 and  $\text{LC}_{50}$  23  $\mu\text{L}/\text{L}$  air) was significantly more toxic than *J. polycarpus* ( $\text{LC}_{50}$  368.4 and  $\text{LC}_{50}$  45.13  $\mu\text{L}/\text{L}$  air) for *T. confusum* and *E. kuehniella*, respectively. Results showed that percentage of insect mortality was increased with the concentration and the time of exposure. Essential oils of *J. polycarpus* at lowest concentration (166.65 and 16  $\mu\text{L}/\text{l}$  air) caused 17.50% and 15% mortality after 24 h compared to 90% and 82.5% mortality at the highest concentration (444/4 and 108  $\mu\text{L}/\text{l}$  air) for *T. confusum* and *E. kuehniella*, respectively. Essential oils of *J. sabina* at lowest concentration (166.65 and 8  $\mu\text{L}/\text{l}$  air) caused 27.50% and 10% mortality after 24 h compared to 90% and 100% mortality at the highest concentration (744.37 and 56  $\mu\text{L}/\text{l}$  air) for *T. confusum* and *E. kuehniella*, respectively. Highest repellent activity was observed for essential oil *J. polycarpus* against *T. confusum*, whereas, *J. sabina* essential oil showed maximum repellent activity against *kuehniella*. GC-MS spectrometry showed that the major chemical components of the oil *J. polycarpus* were  $\alpha$ -Pinene (26.97%),  $\delta$ -Cadinene (5.88%), Germacrene B (5.67%) and Germacrene D-4-ol (4.49%) whereas the major chemical components of the oil *J. sabina* were Sabinen (11.73%),  $\alpha$ -Pinene (11.20%), Limonene (8.64%), and Myristicin (8.20%).

**Key words:** *Juniperus polycarpus*, *Juniperus sabina*, Essential oil, Fumigant toxicity, Repellency