

Chemical composition and larvicidal activity of essential oil of *Cupressus arizonica* E.L. Greene against malaria vector *Anopheles stephensi* Liston (Diptera: Culicidae)

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ABSTRACT

Background Using botanical insecticides as an alternative biocontrol technique for vector control is considered by some scientists. **Materials and Methods** Chemical composition of the essential oil was analyzed using gas chromatography-mass spectrometry (GC-MS). In addition, the mosquito larvicidal activity of leaf essential oil of *Cupressus arizonica* was investigated against fourth instar larvae of laboratory-reared *An. stephensi* according to the method of the World Health Organization. **Results** Of 46 constituents in the oil, limonene (14.44%), umbellulone (13.25%) and alpha-pinene (11%) were determined as the main constituents. *Cupressus arizonica* volatile oil showed significant larvicidal activity against *An. stephensi* with LC₅₀ and LC₉₀ values 79.30 ppm and 238.89 ppm respectively. Clear dose-response relationships were established with the highest dose of 160 ppm essential oil with almost 100% mortality. **Discussion** The results from this study revealed that *C. arizonica* essential oil could be considered as a natural larvicide against *An. stephensi*. However, the field evaluation of the formulation is necessary.

KEYWORDS

Anopheles stephensi . botanical insecticide . *Cupressus arizonica* . essential oil . Iran . vector control

REFERENCES