

# Chemical composition of fruit and stem essential oils of *Lantana camara* from northern India

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Received 15 April 2002

Revised 17 July 2002

Accepted 15 August 2002

**ABSTRACT:** The chemical composition of fruits and stem essential oils of *Lantana camara* from the northern plains of India were analysed by GC and GC–MS, which resulted in the identification of 52 and 66 constituents, representing 98.1% and 96.6% of the oils, respectively. The major constituents in the fruits oil were palmitic acid (22.8%), stearic acid (12.8%) and germacrene-D (7.1%), while the major constituents in the stem oil were palmitic acid (32.7%) and stearic acid (23.9%). Copyright © 2003 John Wiley & Sons, Ltd.

**KEY WORDS:** *Lantana camara*; Verbenaceae; essential oils composition; palmitic acid; stearic acid; germacrene-D

## Introduction

*Lantana camara* Linn. (Verbenaceae) is a straggling plant found over a wide area of the tropical and subtropical regions of the world.<sup>1,2</sup> It is native to tropical America and was introduced in India as an ornamental and hedge plant. Now it is commonly available throughout India as an obnoxious weed. The flowers are small, usually yellow or orange changing to red or scarlet, in dense axillary heads.<sup>3</sup> The plant is known to be toxic to grazing animals, which, on ingestion of the leaves, develop hepatotoxicity and photosensitization.<sup>4</sup> This toxicity is believed to be due to the presence of lantadene-A and lantadene-B in the plant.<sup>5</sup>

On the other hand, different parts of the plant have been reported to be a rich source of various bioactive principles.<sup>6–10</sup> The extract of *L. camara* roots has been reported to possess antimalarial activity against *Plasmodium falciparum*,<sup>11</sup> while its lotion is used in folk medicines for the treatment of toothache, wounds, cuts, ulcers and swellings.<sup>12</sup> Recently, roots of *L. camara* have been reported as a potential source of putative hepatoprotective agent oleanolic acid.<sup>13</sup>

*L. camara* spreads rapidly in sunny environment and in India it is threatening many native plant species. In order to make commercial use of this obnoxious weed, extensive work is being carried out at our institute and various parts of the world. In our earlier investigation, we reported the chemical composition of leaf and flower

essential oils of *L. camara* from India.<sup>14</sup> To the best of our knowledge, no detailed investigations on the essential oil composition of *L. camara* fruits and stems have been carried out. This prompted us to carry out detailed GC and GC–MS examination of fruits and stem essential oils of *L. camara*.

## Experimental

### Plant Materials

The fruits and stem of *L. camara* were collected in the month of December 2000, from the Kukrail Reserved Forest, Lucknow. A voucher specimen has been deposited in the Herbarium Division of the Institute.

### Isolation of Volatile Components

The crushed fresh fruits and chopped stem were subjected to hydrodistillation in a conventional Clevenger-type apparatus for 4 h. The yield of volatile oils was very poor, i.e. 0.02% and 0.01% (v/w), respectively. The oils were dried over anhydrous sodium sulphate and stored at 4 °C until analysed.

### Gas Chromatography (GC)

GC analysis of the oil was performed on a Perkin-Elmer GC 850 gas chromatograph equipped with FID, using a fused silica capillary column (25 m × 0.25 mm i.d., film thickness 0.25 µm), coated with dimethyl polysiloxane

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Contract/grant sponsor: Department of Biotechnology, Government of India.