

Quinolizidine Alkaloid Profiles of *Lupinus varius orientalis*, *L. albus albus*, *L. hartwegii*, and *L. densiflorus*

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Quinolizidine Alkaloids, Biological Activity

Alkaloid profiles of two *Lupinus* species growing naturally in Egypt (*L. albus albus* [synonym *L. termis*], *L. varius orientalis*) in addition to two New World species (*L. hartwegii*, *L. densiflorus*) which were cultivated in Egypt were studied by capillary GLC and GLC-mass spectrometry with respect to quinolizidine alkaloids. Altogether 44 quinolizidine, bipiperidyl and proto-indole alkaloids were identified; 29 in *L. albus*, 13 in *L. varius orientalis*, 15 in *L. hartwegii*, 6 in *L. densiflorus*. Some of these alkaloids were identified for the first time in these plants. The alkaloidal patterns of various plant organs (leaves, flowers, stems, roots, pods and seeds) are documented. Screening for antimicrobial activity of these plant extracts demonstrated substantial activity against *Candida albicans*, *Aspergillus flavus* and *Bacillus subtilis*.