

## Isolation of new disulphides from *Ferula foetida* oleo-gum-resin

Y. Shokohinia<sup>1</sup>, A. Ghannadi<sup>2</sup>, K. Fattahian<sup>3,\*</sup>, G. Appendino<sup>4</sup>, O. Taglialatela-Scafati<sup>5</sup>

<sup>1</sup>Department of Pharmacognosy and Biotechnology, School of Pharmacy, Kermanshah University of Medical Sciences, Kermanshah, Iran

<sup>2</sup>Department of Pharmacognosy, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

<sup>3</sup>Isfahan Pharmaceutical Sciences Research Center, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Isfahan, Iran

<sup>4</sup>Dipartimento di Scienze Chimiche, Alimentari, Farmaceutiche e Farmacologiche, Università del Piemonte Orientale, Novara, Italy

<sup>5</sup>Dipartimento di Chimica delle Sostanze Naturali, Università di Napoli Federico II, Napoli, Italy

**Background and Aims:** The genus *Ferula* (Apiaceae) comprises about 170 species occurring from central Asia westward to northern Africa. The Iran flora comprises 30 species. *Ferula* spp presents interesting phytochemical features such as the occurrence of sulphides and sesquiterpene coumarins. Many biological features of this genus such as cytotoxicity, antibacterial, antiviral, P-glycoprotein (P-gp) inhibitory and anti-inflammatory activity have been attributed to sesquiterpene coumarins and sulphides. *F. foetida* is one of the species that produce *asafetida* oleo-gum-resin with several traditional uses.

**Methods:** Oleo-gum-resin was collected from Jandagh near Isfahan, central Iran. Air dried material was extracted with hexane using maceration method for 24 h and the solvent was evaporated in vacuo. Repeated open normal phase column chromatographies and HPLCs using n-hexane and ethyl acetate as mobile phases resulted in isolation of several sulphides. The structure of isolated coumarins was elucidated using 2DNMR and MS spectra.

**Results:** Several new sulphides along with known disulphides like foetisulphide A were purified and structures elucidated. **Conclusions:** Since sulphides have biological active functional groups, a plant rich in sulphides can be used as a source of pharmacologically active phytochemicals.

**Keywords:** Disulphide; foetisulphide A; *Ferula*; *Assafetida*; 2D NMR