

4th International Conference and Exhibition on

Natural Products Medicinal Plants & Marine Drugs

June 11-12, 2018 | Rome, Italy

Comprehensive pro-wound healing analysis of compounds found in *Anchusa strigosa* and *Phlomis viscosa* Poiret

Ludmila Yarmolinsky¹, Arie Budovsky², Shimon Ben-Shabat³, Boris Khalfin¹ and Leonid Yarmolinsky⁴¹Eastern R&D Center, Israel²Technological Center, Biotechnology Unit, Israel³Ben-Gurion University of the Negev, Israel⁴Arnie Miller Laboratories, Israel

Some pro-wound healing (WH) properties of several plant extracts from the Judea region (Israel) were investigated both *in vivo* and *in vitro*. Our preliminary results demonstrate that the best WH properties belonged to the ethanol extracts from *Phlomis viscosa* Poiret leaves (a shrub growing in Israel, Turkey, Lebanon and Syria) and *Anchusa strigosa* flowers (eastern Mediterranean plant found in Italy, Cyprus, Turkey and Israel). The pro-WH activity of the ethanolic extract of this plant could be explained by phytochemicals in the extract. These could be either pro-WH compounds already mentioned in the literature, or yet other unidentified phytochemicals. Phytochemicals of *A. strigosa* were not investigated in depth so far. The aims of the present study were to identify bioactive compounds including volatile terpenes and bioinformatically analyze their potential human therapeutic targets (proteins and other biomolecules). Different parts of the plant (leaves, stems, flowers) were examined by us using GS-MS, a Varian CP-3800 GS-MS analytical system based on the NIST standard reference database analytical library. In addition, HPLC was also applied. If unknown compounds appeared in the process of GS-MS and HPLC assays, their further identification was performed on the basis of results obtained with assistance of LC-ESI-MS, MALDI-TOF-MS, GC-MS and NMR. After identifying the terpenes by GS-MS in various organs of these plants, we searched for bioactive compounds mentioned in the literature, but did not find such chemicals. Given that the plant from the Judea region (Israel) belonged to a particular chemotype, it was logical to assume that the active phytochemicals would differ from already known pro-WH compounds. The results obtained by us confirmed this hypothesis. After determining the non-lethal concentrations of phytochemicals, we have screened them for WH modifying activity using the scratch assay. Among the pro-WH compounds identified by us, combination of three chemicals, diosmin, 1-octen-3-ol and himachala-2, 4-diene enhanced WH significantly ($p < 0.001$) in *in vitro* model. The obtained results form a basis for potential use of plant phytochemicals combination in the treatment of chronic wounds.

liora@bgu.ac.il