

Ethnopharmacological relevance

Mercurialis annua L., *Bongardiachrysogonum* L., and *Viscumcruciatum* Sieb have been traditionally used by local herbalists in Jordan for the treatment of hematopoietic neoplasms.

Aim of the study

To determine the anti-cancer, anti-inflammatory and anti-microbial potentials of the three extracts against two of the most common hematopoietic malignancies in the Jordanian populations; Burkitt's lymphoma and Multiple myeloma.

Materials and methods

The anti-cancer activity was tested against the two cell lines (BJAB Burkitt's lymphoma and U266 multiple myeloma) using the MTT and trypan blue assays. The agar dilution assay was used to study the anti-microbial activity against Gram-positive bacteria, Gram-negative bacteria, anaerobic bacteria and yeast. The pro-inflammatory cytokines interleukin (IL) -1 β , IL-8 and tumor necrosis factor- α (TNF- α) were measured in the pretreated cell lines using ELISA assay to determine the anti-inflammatory activity of *Viscumcruciatum* Sieb against the two cell lines.

Results

The results show no evidence of stimulation of tumor growth by any of the three extracts comprising cell lines from hematological malignancies, but *Viscumcruciatum* Sieb showed a selective anticancer activity against BJAB cells, with IC_{50} value of 14.21 μ g/ml. The antimicrobial effect was only noticed with *Viscumcruciatum* extract by inhibiting *Staphylococcus aureus*, *Candida albicans* and *Propionibacterium acne*, but not *Pseudomonas aeruginosa* at MIC of 1.25, 1.25, 0.625 and <5 mg/ml, respectively. The highest activity was against the anaerobic bacteria *Propionibacterium acne*. *Viscumcruciatum* Sieb extract showed an inhibitory effect on the pro-inflammatory cytokine IL-8, but it increased TNF- α and IL-1 β secretions in BJAB cells. Whereas, it had an inhibitory effect on TNF- α and IL-1 β cytokines while it enhanced IL-8 secretions in U266 cells.