

## A191 Antimicrobial activity of *Leontopodium alpinum* (Edelweiss)

M.J. Dobner<sup>a</sup>, S. Schwaiger<sup>a</sup>, I. Jenewein<sup>b</sup> and H. Stuppner<sup>a</sup>

<sup>a</sup>Institute of Pharmacy, Dept. of Pharmacognosy, University of Innsbruck, Austria. <sup>b</sup>Institute of Hygiene, University of Innsbruck, Austria.

*Leontopodium alpinum* Cass. commonly known as the European Edelweiss, is endemic to Europe, growing on limestone formations at altitudes up to 3140 m. In the alpine region aerial parts of Edelweiss have traditionally been used for the treatment of angina, bronchitis, diarrhoea, fever and abdominal complaints. Recently, we reported on the anti-inflammatory activity of this plant (1,2). This contribution refers to the antimicrobial activity of *L. alpinum* constituents. The growth inhibition was determined by the agar well diffusion method using Müller-Hinton Agar. The minimum inhibitory concentration (MIC) was determined by the microbroth method according to NCCLS criteria (3) Bioguided fractionation of the crude plant extracts was monitored by means of 2D-TLC-bioautography. Significant activities against various *Staphylococcus aureus* and *Streptococcus pyogenes* strains activities were shown by bisabolane (4) and pentacyclic sesquiterpenes (5) as well as linolic- and linolenic acids. Kaempferol, luteolin, myricetin and quercetin showed good efficacy against *Streptococcus pyogenes*. These data may explain at least partially the ethnomedicinal use of Edelweiss.

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**References:** 1. Stuppner, H. et al. (2000) 3rd International Congress on Phytomedicine, Munich, Germany. 2. Dobner, M.J. et al. (2001) 49th Annual Congress of the Society for Medicinal Plant Research, Erlangen, Germany. 3. National Committee for Clinical Laboratory Standards (NCCLS) (1993) 3rd ed. M7-A3. Villanova, PA. 4. Stuppner, H. et al. (2002) *Helv. Chim. Acta*: accepted. 5. Schwaiger, S. et al. (2002) PhD Thesis in progress, University of Innsbruck, Austria.

## A192 An assessment of three *Carpobrotus* species extracts as potential antimicrobial therapeutics

E. Springfield<sup>a</sup>, W. Mabusela<sup>b</sup>, G. Amabeoku<sup>c</sup> and Q. Johnson<sup>d</sup>

<sup>a</sup>School of Pharmacy Traditional Medicine Unit, University of the Western Cape, Private Bag X17, Bellville 7535, South Africa. <sup>b</sup>Department of Chemistry, University of the Western Cape, Private Bag X17, Bellville 7535, South Africa. <sup>c</sup>Department of Pharmacology, University of the Western Cape, Private Bag X17, Bellville, 7535, South Africa. <sup>d</sup>The Applied Herbal Sciences Programme and Department of Medical Biosciences, University of the Western Cape, Private Bag X17, Bellville 7535, South Africa.

For centuries, indigenous people in South Africa have used a variety of medicinal herbs to treat chronic infections. This investigation focused on three *Carpobrotus* species, in an attempt to assess its potential antimicrobial activity.

Extracts of varying polarities of the plants were prepared and tested against *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Candida albicans* and *Mycobacterium smegmatis*. For the disc diffusion method, ciprofloxacin (40 µg/disc) served as positive control for *S. aureus*, *P. aeruginosa* and *M. smegmatis*, whereas amphotericin B (25 µg/disc) was the control for *C. albicans*. A sample concentration of 10 mg/ml was used. Minimum inhibitory concentrations (MIC) were determined by two-fold serial dilution. Phytochemical analysis was done and showed the presence of flavonoids, hydrolysable tannins, phytosterols and aromatic acids. The ethyl acetate extracts (21 µl of 95 mg/ml) were used for bio-autography, together with TLC analyses and HPLC fingerprinting.

*Carpobrotus mellei*, *C. murii* and *C. quadridens* showed antimicrobial activity against *S. aureus* and *M. smegmatis* in the disc diffusion method and clear inhibition zones were observed on the TLC plates. HPLC fingerprinting of the three species showed similarities with common peaks detected at 366 nm, and provided a phytochemical map of potentially important natural bioactives.

This investigation confirms that extracts of the three *Carpobrotus* species that are used as indigenous medicines, exhibit anti-bacterial activity. This scientific information can serve as an important platform, for the development of inexpensive, safe and effective natural anti-infective therapeutics.

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