Clinical and Technical Bulletin

Manuka and Liquorice Applications in Dermatology

Manuka essential oil (*Leptospermum scoparium*, Red Manuka, Kahikatoa)

Manuka is a small tree or shrub that is abundant throughout New Zealand, in many diverse ecosystems from the lowland to sub-alpine areas. The aromatic and oily nature of Manuka can be easily noted when crushing the leaves by hand. The aroma comes from the essential oil contained in the leaves and scent glands at the base of the leaves.

The chemical make-up of Manuka oils varies between different New Zealand locations and there are four predominant chemotypes: monoterpene rich, sesquiterpene rich; enhanced triketones in sesquiterpene rich oils and mixed oils with a balance of monoterpenes and sesquiterpenes.

Manuka oil, particularly the triketone rich oil has activity against pathological bacteria e.g. staphylococcus, Listeria, Enterococcus and some fungi e.g. Trichophyton, Microsporum as well as anthelmintic and insecticidal activities. The unique activity of the East Cape Manuka oils against gram-positive bacteria e.g. Staphylococcus aureus and its antibiotic strain resistant MRSA, has been conclusively proven to be due to the presence of cyclic triketones. Manuka oil has been shown to be effective against 39 separate organisms, in particular microbials that affect the skin. These triketones particularly Leptospermone, iso-leptospermone and falesone appear to be responsible for the beneficial effect of restricting the diffusion of toxins and lessening the adverse reaction to insect bites and stings. These actives also have a soothing effect to itchy and irritated skin.

Manuka oil has been used for relieving pain and stiffness in muscles, joints and limbs as well as for the topical application for the treatment of cold sores and boils. Other medicinal uses include acne, arthritis, blisters, eczema, warts, psoriasis, herpes, fungal infections and burns.

Figure 1. Manuka – *Leptospermum scoparium*

Liquorice (*Glycyrrhiza glabra, Glyyrrhiza uralensis*)

Liquorice is one of the most widely known medicines in ancient history and records of its use are abound in Chinese manuscripts from about 2000 BC. It is also a major medicinal herb used in Kampo, Ayurvedic and western herbalism.

In early studies, glycerrhetinic acid (an active compound from Liquorice) caused considerable interest as a topical treatment for inflammatory skin disorders. Anti-inflammatory activity has been documented topically for example, a 5% solution of glycyrrhizin demonstrated comparable anti-inflammatory activity to a 1% solution of the steroidal anti-inflammatory drug dexamethasone. Another study has also documented that a liquorice extract liniment had similar activity to a 0.5% prednisolone drug preparation. According to one study people with eczema improved with an ointment of pure glycyrrhetinic acid, which was as effective as hydrocortisone. Glycyrrhetinic acid exerts a direct anti-inflammatory effect by inhibiting 15-hydroxyprostaglandin dehydrogenase and delta-13-prostaglandin reductase affecting the metabolism of inflammatory prostaglandins. When liquorice is applied to the skin, glycyrrhetinic acid increases the activity of topical hydrocortisone. This effect might allow less hydrocortisone to be applied and thus less reduction in side effects when combined with Liquorice.

Gladbridin, also a constituent of Liquorice has been found in-vitro to have anti-oxidant effects. Gladbridin is a unique compound possessing more than one function; not only in the inhibition of melanogenesis but also the inhibition of skin inflammations.

Liquorice has been shown to have antiviral activity and particularly effective topically against herpes simplex and shingles. Viral growth inhibition is due to the active compound glycyrrhetinic acid.

Figure 2. Liquorice – *Glycyrrhiza glabra*