

In-vitro investigation of the wound-healing properties of *Buddleja globosa*

ABRAHAM Y. MENSAH, PETER J. HOUGHTON, MARGARET HUGHES* AND GEORGE W. CHERRY*

Department of Pharmacy, King's College London, Manresa Road, London SW3 6LX, and
*Department of Dermatology, The Churchill Hospital, Oxford OX3 7LJ

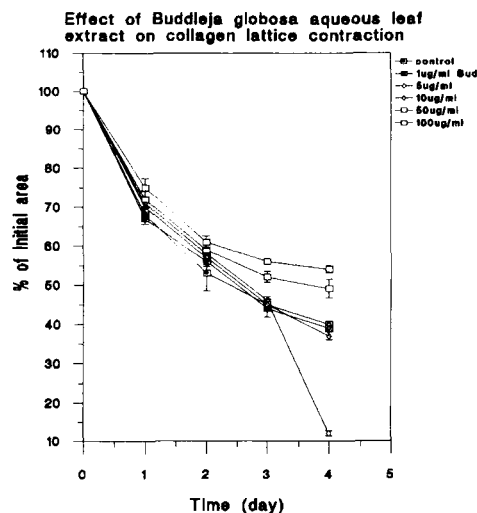
The complex process of wound healing can be considered as a number of different phases: inflammation, formation of granulation tissue with neovascularisation, wound contraction, re-epithelialisation and tissue remodelling (Clark, 1988).

These phases can be monitored using *in vitro* models. *Buddleja globosa* leaves are used in Chile and Bolivia as an aid in wound healing and for the removal of warts and callous ulcers (Houghton, 1984).

The effect of aqueous extract of the leaves on the proliferation of human dermal fibroblasts (an *in vitro* model for monitoring the formation of granulating tissues stage of wound healing) and the protective effect against hydrogen peroxide induced damage (a model for evaluating the inflammation stage of wound healing) were monitored by the MTT colorimetric method of assay (Mossman, 1983).

The extract at a concentration of 1 µg/ml had a slight stimulatory effect on the proliferation of fibroblasts. However, at 5 µg/ml it had a statistically significant antioxidant protective effect against hydrogen peroxide induced damage. The extract was found to be cytotoxic at 50 µg/ml. Fractionation of the extract resulted in the isolation of iridoids, phenylpropide glycosides and flavonoids. *In vitro* antioxidant assay using human dermal cell line has shown the protective effect to be due to the phenylpropide glycosides verbacoside and echinacoside and the flavonoids luteolin, 6-hydroxyluteolin and linarin.

The tissue remodelling stage of wound healing can be followed by the effect of the extract on the contraction of a hydrated collagen lattice. Any product which can regulate the contraction of collagen lattice (measured by area) can influence the formation and nature of the scar formed. Preliminary results show (see below) that high doses of the aqueous extract of *Buddleja globosa* leaves slows the contraction of collagen lattice. This may be another mechanism by which the extract influences the process of wound healing.



References:

- Clark R.A.F. (1988) Overview and General Considerations of Wound Repair, In: Clark R.A.F, Henson PM, eds: The Molecular and Cellular Biology of Wound Repair, Plenum Press, New York.
Houghton P. J. (1984) *J. Ethnopharmacol.* **11**: 293-307.
Mossman T. (1983) *J. Immunol. Meth.* **65**, 55-63.