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A naturally occurring growth promoter for human melanoblasts in culture

Z. LIN* **, P. DONATIEN†, A. RAMAN** AND D. C. BENNETT†

*Institute of Chinese Medicine, 44-46 Chandos Place, London WC2N 4HS, †Department of Anatomy and Developmental Biology, St George's Hospital Medical School, London SW17 0RE, and **Pharmacognosy Research Laboratories, Department of Pharmacy, King's College London, Manresa Road, London SW3 6LX*

Vitiligo, a common skin pigment disorder characterised by the development of depigmented macules due to destruction of functional epidermal melanocytes, has unknown aetiology and is notoriously difficult to treat. It is anticipated that successful treatment should be able to repopulate the vitiliginous skin with cells of melanocytic origin from outer root sheath of hair follicles (Ortonne et al, 1993). We have previously found that piperine stimulates the proliferation of mouse melanocytes *in vitro*. In the present study, we investigated the effect of piperine on the growth of diploid human melanocyte precursors (melanoblasts). P.D. has recently developed a method to isolate these cells from human foetal skin (manuscript in preparation).

Subconfluent melanoblasts maintained in MCDB 153 medium supplemented with 10% FBS, 10ng/ml stem cell factor and 1nM endothelin 3 were subcultured and inoculated with $6x10^3$cells/well into 96-well plates (n = 6). The final piperine concentrations were 1, 5, 10, 100μM with 20nM 12-*o*-tetradecanoyl-phorbol-13-acetate (TPA) as positive control. The incubation was conducted for 5 days before it was evaluated with SRB protein assay for cell number (Skehan et al, 1990). One way ANOVA and Dunnett's comparison was employed to test the significance of any difference; growth in the presence of piperine and TPA was expressed as % of control incubations containing no piperine or TPA (Fig.). The experiments were repeated using melanoblasts from 3 separate donors with similar results obtained.

Piperine at the concentrations of 5, 10 and 100μM significantly stimulated human melanoblast cell proliferation, though its effect was less potent than that of TPA, a well-known melanocytic proliferant agent (Bennett et al 1987).

Based on the findings of these experiments, we conclude that piperine possesses the proliferant activity on human melanocyte precursor cells, and therefore exhibits a potential as a prospective treatment of vitiligo.

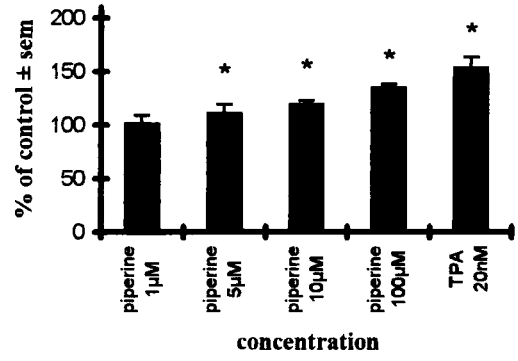

Fig. Effect of piperine and TPA on the growth of human melanoblasts
* $p<0.05$

Bennett, D.C. et al (1987) Internatl. J. Cancer. 39:414-418.
Ortonne, J. et al (1993) Pigment Cell Research. 6:61-72.
Skehan, P. et al (1990) J. Natl. Cancer Insti. 82:1107-1112.

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