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LETTER TO THE EDITOR

A possible role for leukotriene B_4 in head and neck cancer

Sir – Leukotriene B_4 (LTB_4) formed through 5-lipoxygenation of arachidonic acid shows potent biological actions aligned to the high incidence of immunological deficiencies and inflammatory symptoms associated with human head and neck cancer (Papenhausen *et al.*, 1979; Bray, 1983). Although homogenates of human squamous cell carcinomas (HSCC) contain 5, 12 and 15 hydroxy-eicosatetraenoic acids the presence of LTS has yet to be established (El-Attar *et al.*, 1985).

Tumour tissue was obtained from the cheek pouch of nine Syrian hamsters after 12 weeks of three applications of dimethylbenzanthracene (DMBA 0.5% in mineral oil) per week as previously described (Eveson, 1981). Animals painted with vehicle alone served as controls. Human studies were carried out in cancerous and unaffected control tissue from eight patients undergoing resection for squamous cell carcinoma of the head and neck. Clinical indices were routinely measured and previous treatments recorded.

Each tissue was extracted in ice-cold ethanol (80%) in the presence of ^{3}H-LTB_4 (2 nCi, 32 Ci mmol^{-1}) for recovery estimation. Samples were then purified by reverse-phase high performance liquid chromatography (Mathews *et al.*, 1981) and LTB_4 was measured by specific radioimmunoassay using a double antibody technique (Hayes *et al.*, 1983).

Our results (Table I) show the presence of LTB_4-ir in animal and HSCC in amounts similar to that observed for other arachidonic acid metabolites, of which prostaglandin E_2 (PGE_2) has received much attention (Porteder *et al.*, 1984). A likely source of LTB_4 could be inflammatory or malignant cells.

The effects of 5-lipoxygenase products on tumour biology are not well understood but a role for LTB_4 as a mediator of inflammation (Ford-Hutchinson *et al.*, 1980), and immunoregulation (Rola-Pleszczynski & Sirios, 1983) has been proposed. In the inflammatory response, LTB_4 stimulates increased vascular permeability and oedema responses particularly in the presence of vasodilator substances such as PGE_2 (Wedmore & Williams, 1980). LTB_4 significantly inhibits human mitogen-induced lymphocyte proliferation *in vitro* probably provided through PGE_2 release leading to immunosuppression (Rola-Pleszczynski & Sirios, 1983) and as patients with head and neck cancer show a low level of immune competence this may be important.

Table I Measurement of LTB_4 immunoreactivity in squamous cell carcinoma of the oral cavity

	Hamster		*Human*	
	Control ($n=10$)	*Tumour* ($n=9$)	*Unaffected tissue* ($n=8$)	*Tumour* ($n=8$)
Tissue weight (g)	0.06±0.04	0.5±0.07	0.04±0.14	0.04±0.08
LTB_4-ir (ng g^{-1})	0.05±0.3	14.7±4.0[a]	1.5±1.0	17.6±5.9[b]
Recovery (%)	52.8±6.0	43.0±3.0	53.3±7.1	46.0±5.8

[a] $P<0.01$ compared with control values (Wilcoxon unpaired rank sum test).
[b] $P<0.05$ compared with unaffected tissue (Wilcoxon paired rank sum test).

The observation that LTs can protect cancerous tissue against radiation therapy could have pathogenic and clinical implications (Hansen, 1987). If LTB_4 does play a role in the pathogenesis of head and neck cancer, the effects of pharmacological modification of its actions should be evaluated. Yours etc.,

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