Investigation of the Immunostimulatory Properties of Oxihumate

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A unique process has been developed to convert bituminous coal by controlled wet oxidation followed by base treatment to a water-soluble humate called oxihumate. The effects of oxihumate on the proliferative response of lymphocytes has been studied *in vitro* and *ex vivo*. Oxihumate increased the proliferative response of phytohaemagglutinin-stimulated human lymphocytes, from a concentration of 20 μg/ml and upwards. This response was even more striking in the case of lymphocytes from HIV-infected patients and was not limited to the *in vitro* setting since similar effects were observed *ex vivo* following administration of a non-toxic dosage of 4 g oxihumate per day to HIV-positive individuals for two weeks. Mechanistic studies revealed that stimulation of the proliferative response of lymphocytes by oxihumate is associated with an increased production of IL-2, as well as expression of the IL-2 receptor in the setting of decreased production of IL-10. Oxihumate therefore holds promise for the treatment of immunocompromized patients.

Key words: Oxihumate, Immunostimulation, IL-2