A069 Immunological activity of a herbal combination preparation: combination of single drug-extracts versus extraction of a drug mixture

C. Bodinet and J. Freudenstein
Schaper & Brümmer GmbH & Co.KG, Bahnhofstr. 35, 38259 Salzgitter, Germany

The herbal immunomodulator Esberitox® N contains an aqueous-ethanolic extract of a mixture of Thujae occidentalis herba, Baptisiae tinctoriae radix, Echinaceae purpureae radix and Echinaceae pallidae radix. For this extract immunological activity has been shown *in vitro* and *in vivo* (1). The aim of this investigation was to compare the immunological potency of this mixture extract to a parallely manufactured combination of single extracts from the different drugs. The extract mixture was prepared in two different ways.

The immunological activity of the different extracts was tested in two test models. First their effects on spleen cell proliferation were tested in the lymphocyte proliferation assay measuring the de novo DNA-synthesis by quantification of the incorporation of radioactively labeled [6-^{3}H]-thymidine. In a second test model their influence on the IgM production of mouse spleen cells was investigated *in vitro*.

The mixture extract induced a stronger increase in the proliferation rates of spleen cells than the extract mixtures did. It also increased the production of IgM by mouse spleen cells significantly more strongly than the combination extracts. Concerning the immunological activity it may be assumed that the extraction of a mixture of these four immunologically active drugs has advantages over the combination of single drug extracts. Differences between the extracts could also be seen in chemical analysis.

References: 1. Bodinet, K. (1999) Immunpharmakologische Untersuchungen an einem pflanzlichen Immunmodulator. Dissertation , Greifswald, EMAU Greifswald.

A070 Effects of long-term application of a herbal immunomodulator on the immune response in rats

C. Bodinet [a], *T. Nißlein* [a], *F. Gessler* [b] *and J. Freudenstein* [a]
[a] Schaper & Brümmer GmbH & Co.KG, Bahnhofstr. 35, 38259 Salzgitter, Germany, [b] Institut für angewandte Biotechnologie der Tropen, Kellnerweg 6, 37077 Göttingen.

For the herbal immunomodulator Esberitox® N immunological activity has been shown *in vitro* and *in vivo* (1). Because the potential risk of immunostimulators to induce immunosuppression after long-term application is being discussed, the influence of Esberitox® N on the immune response in rats after an application period of several months was investigated.

Three groups of rats were immunized by i.m injection of a formaline-detoxified culture supernatant of *Clostridium botulinum* at d0 and d+10. Esberitox® N was administered via the drinking water either according to a short-term regimen (d-3 until d+3) or to a long-term regimen for 8 months (life-long; d-244 until d+3). In the control group the treatment was stopped at d-43. Blood was collected at days 0, 10, 14, 30 and antibody titers (vs immunogen or highly purified toxoid) in the serum were quantified by means of specific ELISAs. Short- and long-term application of Esberitox® N significantly enhanced the antibody titers in comparison to the control group. Concerning the development of more relevant anti-toxoid antibodies long-term application showed advantages over short-term application.

In another set of experiments the effects of long-term application (1-6 month) of Esberitox® N on immune parameters like spleen weight, number of spleen cells, Peyers Patches and PBL, white blood cell counts, proliferation of spleen cells and PBL, antibody production and cytokine titers in the serum and cell supernatants were tested. There was no indication for any immunsuppressive effects. On the contrary, further evidence for an immunostimulating activity concerning the Ig- and IFNγ-production of spleen cells, could be found.

References: 1. Bodinet, K. (1999) Immunpharmakologische Untersuchungen an einem pflanzlichen Immunmodulator. Dissertation, Greifswald, EMAU Greifswald.