

Immunomodulatory and anticoagulant capacity of dextrans and derivatives with different molecular weights

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INTRODUCTION: A group of polysaccharides called glucans is described with different biological and pharmacological activities. However, there are few data about pharmacological and biological potential of dextrans (α -D-glucan). **OBJECTIVE:** In this context, we investigated the immunomodulatory and anticoagulant activities from dextrans with different molecular weight and their phosphorylated derivatives. **MATERIALS AND METHODS:** Dextrans with molecular weights (10 (D10), 40 (40) and 147 (D147) kDa) were purchased from SIGMA and used to produce their phosphorylated derivatives P10, P40 and P147. The six samples were submitted to chemical and infrared analysis. Prothrombin time (PT) and activated partial thrombin time (aPTT) were performed to evaluate the anticoagulant capacity. In order to evaluate the immunomodulatory potential, mitochondrial reduction of MTT and production of oxide nitric (NO) were performed. **RESULTS AND DISCUSSION:** None sample showed anticoagulant activity. On the other hand, D40 was the unique native dextran that showed immunomodulatory property since it stimulated the proliferation of murine macrophages (RAW 264.7) and also induce the release of NO by these cells. The phosphorylated derivatives also showed immunomodulatory properties. In this case, P10 was the most potent sample, followed by P147. **CONCLUSION:** The results point toward dextrans with a 40 kDa weight as being ideal for immunomodulatory use, and this activity can be improved with the phosphorylation of dextran. However, future studies with the D40 and other similarly dextrans are to confirm this hypothesis.

Keywords: Chemical modification, phosphate, blood clotting, immune response.

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