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LECTINS AND IMMUNITY IN COMPOUND ASCIDIANS

Lectins are proteins able to recognize and bind specific glycoconjugates, widely distributed among plants and animals. Most of them have agglutinating activity towards vertebrate erythrocytes and other animal cells, due to the presence of multiple carbohydrate recognition domains which bind to cell surface sugars.

A great number of invertebrate lectins have been described in the last two decades: they show different specificities, sizes and physico-chemical properties and are believed to be involved in various processes, such as cell-cell interaction, fertilisation, morphogenesis and defence reactions.

Ascidians are invertebrate chordates phylogenetically close to vertebrates and the study of their immune responses can contribute to a better understanding of the complex immune system of vertebrates.

In compound ascidians, lectins play an important role in opsonisation of foreign particles or cells having entered the organism. They can also induce cell proliferation and enhance the recruitment of immunocytes to the infection area.

In the compound ascidian *Botryllus schlosseri*, our model organism, we recently identified a rhamnose-binding lectin (BsRBL)which can recruit phagocytes, activate their respiratory burst with the consequent production of microbicidal reactive-oxygen species, and stimulate phagocytosis of foreign target cell by opsonising them and inducing cytoskeletal changes in phagocytes. In addition, BsRBL induces the synthesis and release, by cytotoxic morula cells, of cytokines recognised by anti-IL-1 and anti-TNF antibodies, with chemotactic activity towards cytotoxic immunocytes. It also triggers the degranulation of morula cells with the consequent release of the cytotoxic enzyme phenoloxidase. Results suggest an important role of BsRBL in *Botryllus* immunobiology and support the existence of a cross-talk between *B. schlosseri* immunocytes.