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Lectins as mitosis stimulating factors: briefly reviewed

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Abstract

Lectins are carbohydrate binding proteins that can stimulate cell proliferation. This property makes these biomolecules capable of being used as mitogen reagents to study the interaction with lymphocytes allowing evaluation of immunomodulatory action, since B and T lymphocytes are related to humoral and innate immunity, respectively. Isolated cells from spleen, which include lymphocytes, are widely applied as a model in screening lectin mitogenic capacity. This mitotic stimulus is initiated by interaction of the lectin with T-cell receptor on cell surface. This brief review article aims to explain how cell proliferation, especially lymphocytes, can be achieved through lectin induction. Additionally, this work intend to highlight the main colorimetric and radiographic techniques to encourage the scientific community in searching for new mitogenic lectins.

Keywords: lectin; lymphocyte; cell proliferation; mitosis.

1. Introduction

The immune system can fight invading agents of the organism through two mechanisms: innate and adaptive immune response. Innate immunity is the first line of defense in an infection; this action occurs by identifying invariant pathogen-associated molecular patterns (PAMPs) through germ-line-encoded pattern recognition receptors (PRRs) [1,2]. Adaptive immunity is characterized by the specific recognition of pathogens that occurs due to expansion of B and T lymphocytes having unique antigen receptors [2].

B lymphocytes are responsible for humoral immunity, as these activated cells can develop into plasmocytes secreting antibodies or memory cells which remain in the lymph nodes until another immune response. Cell-mediate immunity consists of two populations of T lymphocytes: T helper cells (CD4⁺ T cells) that do not destroy infected cells or pathogens, but can activate other cells of the immune system; and T-cell killer

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