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Beta-glucans as anticancer agents

Anshu Agrawal, Sudhanshu Agrawal and Sudhir Gupta
Department of Medicine, University of California–Irvine, USA

Pattern-recognition receptors (PRRs) detect molecular signatures of microbes and initiate immune responses to infection. Immune responses generated by prototypical PRRs such as Toll-like receptors (TLRs) have been widely investigated. In contrast, the immune responses initiated by other classes of putative PRRs remain ill defined. C-type lectins are a class of PRRs that recognize carbohydrate structures which are often part of microbial pathogens. Dectin-1 is a C-type lectin receptor present on dendritic cells that recognizes fungal β-glucans. Our investigations suggest that Dectin-1 is not just an antigen uptake receptor but also a modulator or initiator of adaptive immune responses. Human dendritic cells stimulated with Curdlan, Dectin-1 agonist prime CD4 Th17 responses via IL-23 production. Furthermore, these CD4 T cells induce differentiation of B cells to secrete IgG and IgA. More importantly; these dectin-1 stimulated dendritic cells promote the expansion and differentiation of granzyme B expressing cytotoxic T lymphocyte that display high cytolytic activity against target tumor cells *in vitro*. The capacity of Curdlan-stimulated human DCs to induce differentiation of these cells makes them attractive target for manipulations in clinic against cancer.

Biography

Anshu Agrawal completed Ph.D. from Central Drug Research Institute, Lucknow and subsequently worked as a Research Scientist in the division of immunology at ICGEB, India. She won a scholarship to work in France and after completing postdoctoral studies is now working as a faculty in the Department of Medicine, University of California, Irvine since last 6 years. She is the recipient of the New Scholar award in aging from the Ellison Medical Foundation. She has published more than 30 papers and serves as an editorial board member and reviewer for several journals. Her primary area of interest is dendritic cells, innate immunity and aging.