



Consiglio Nazionale delle Ricerche

The fantastic voyage of small molecules: natural sulfur-containing metabolites as triggers of central and peripheral immunity

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Innate immunity response is a non-specific, inducible defense to eliminate infections and damaged self-cells and maintain physiological homeostasis and body's health. The response is rapid, occurring minutes or hours after aggression and is mediated by numerous cells including phagocytes and antigen presenting cells, as well as the complement system. Unlike the adaptive (acquired) immune system, innate immunity does not require training or adaptation to specific antigens and follows pathways that have developed early in evolution as an essential response to infection. These mechanisms are based on inherited cellular receptors that respond to a family of chemical signals ranging in size and complexity from small molecules to large macromolecules. How these molecules and the downstream chemical signals translate into a variety of immune responses remains a major issue in the field. Natural products are small molecules (MW < 1000) optimized by evolution to convey dynamic information. Starting from the unparalleled structural diversity of these products, in this contribution I will summarize the results of the recent studies on the unconventional modulation of innate immunity by natural products in our laboratory.



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