Bacteriology-2013

OMICS Group Conferences
Accelerating Scientific Discovery

International Congress on
Bacteriology & Infectious Diseases

November 20-22, 2013 DoubleTree by Hilton Baltimore-BWI Airport, USA

Microbial cell wall glycoconjugates as elicitors and suppressors of eukaryotic innate immunity

Antonio Molinaro

European Carbohydrate Organization, Italy

Abstract

Innate immunity is the first line of defence against invading microorganisms in vertebrates and the only line of defence in invertebrates and plants and therefore plays a crucial role in the early recognition and subsequent triggering of a pro-inflammatory response to invading pathogens.

This mechanism relies on recognition of evolutionarily conserved structures on pathogens, termed microbe-associated molecular patterns (MAMPs), through a limited number of germ line-encoded pattern recognition receptors. MAMPs are characterized by being invariant among entire classes of pathogens, essential for the survival of the pathogen, and distinguishable from "self".

Gram negative lipopolysaccharide and peptidoglycan are two very important cell wall glyco-conjugates and act as MAMPs in eukaryotic/bacteria interactions. Besides their general architectural principle, a number of subtle chemical variations are at the basis of the dynamic host-guest recognition that in case of pathogens is followed by the innate response and in case of symbiosis is followed by its suppression. Therefore, the structural study of such glyco-conjugates involved as virulence factors in animal or plant infections is a pivotal pre-requisite for the comprehension at molecular level of the innate immunity mechanisms.

In this communication I will show some examples of isolation, structure determination and elicitation and/or suppression of plant and animal innate immunity by peptidoglycan and lipopolysaccharides from pathogen and symbiotic Gram negative bacteria.

Biography

Antonio Molinaro is Professor of Organic Chemistry and Carbohydrate Chemistry at the Faculty of Science of University of Naples Federico II.

He is deeply interested in any aspect of Glycosciences and has published on this topic over 170 papers all in international peer-reviewed journals of organic and biomolecular chemistry. He is the president of European Carbohydrate Organization.

He is member of the editorial board of the following journals: Carbohydrate Research, Glycobiology, Marine Drugs, and Innate Immunity, the journal of the International Endotoxin Society. He has been involved as Chairman or component in several regional, national and international projects on structure and function of microbial glyco-conjugates. He is Chairman of a EU project involving 22 countries and 50 research groups on "Microbial cell surface determinants of virulence as targets for new therapeutics in Cystic Fibrosis".