

Galectins in the Pathogenesis of Preeclampsia

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Abstract

A healthy placenta has long been acknowledged during gestation as a keystone of fetal development, and nearly all pregnancy complications have been linked to improper development of the placental vasculature. Restriction of placental blood flow has major consequences for both fetus and mother during gestation. Increased vascular resistance and reduced uterine blood flow are associated with intrauterine growth restriction, and are predictors of high-risk pregnancies. On the maternal side, the demand for increased blood flow in an improperly formed placenta has dangerous consequences for maternal health, leading to pregnancy diseases such as preeclampsia. The galectin (gal) family, defined by a canonical carbohydrate recognition domain (CRD) of approximately 130 amino acids with specificity for β -galactosides, represents the most widely expressed class of lectins in all organisms. Galectin family members have been shown to exert several roles in the context of reproduction. They contribute to placentation, maternal immune regulation and facilitate angiogenesis encompassing decidualization and placenta formation during pregnancy. This lecture will summarize current knowledge on galectins as regulators of pregnancy and discuss their implication in pregnancy disorders.

Keywords: Glycation, Galectin, Biochemistry

Glycation is the covalent attachment of a sugar to a protein or lipid. Typical sugars that participate in glycation are glucose, fructose, and their derivatives. Glycation is the non-enzymatic process responsible for many complications in diabetes mellitus and is implicated in some diseases and in aging

Biochemistry is both life science and a chemical science - it explores the chemistry of living organisms and the molecular basis for the changes occurring in living cells. It uses the methods of chemistry,

"Biochemistry has become the foundation for understanding all biological processes. It has provided explanations for the causes of many diseases in humans, animals and plants."

physics, molecular biology, and immunology to study the structure and behaviour of the complex molecules found in biological material and the ways these molecules interact to form cells, tissues, and whole organisms.

Biochemists are interested, for example, in mechanisms of brain function, cellular multiplication and differentiation, communication within and between cells and organs, and the chemical bases of inheritance and disease. The biochemist seeks to determine how specific molecules such as proteins, nucleic acids, lipids, vitamins, and hormones function in such processes. Particular emphasis is placed on the regulation of chemical reactions in living cells.