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Tityus serrulatus venom induces inflammation by mechanism dependent on lipid mediator release and lipid bodies' formation

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Tityus serrulatus venom (TsV) induces a severe systemic inflammatory reaction that can result in death. For this reason it is very important to understand the mechanisms responsible for the induction of inflammatory mediators release after envenomation. It was demonstrated that TLR2, TLR4 and CD14 receptors sense TsV and its major component, toxin 1 (Ts1), to mediate eicosanoids release and inflammation. Eicosanoids such as LTB₄ and PGE₂ are metabolites from arachidonic acid (AA) released from cell membranes after phospholipase A₂ (PLA₂) action. Consequently, the intracellular signaling cascade leading to production of eicosanoids, and the participation of lipid bodies (LBs) as functional organelles for LTB₄ and PGE₂ synthesis induced by TsV was investigated. Data revealed that TsV induced LBs formation on macrophages by mechanisms dependent on TLR₂ and TLR₄ recognition, and activation of the nuclear receptor PPAR γ . Based on the data, it was suggested that during envenomation, LBs are the functional organelle for eicosanoids production and induction of inflammatory reaction triggered by TsV. Finally, the term venom-associated molecular pattern (VAMP) was suggested to indicate molecules that are introduced into the host by stings and are recognized by PRRs, resulting in inflammation.

Biography

Lúcia Helena Faccioli has completed her PhD from São Paulo University (USP) and Postdoctoral studies from National Heart and Lung Institute, London in 1989-1990. She is full Professor in Immunology and Class 1A Researcher for the National Council for Scientific and Technological Development, since 2007; Head of the Laboratory of Inflammation and Immunology at School of Pharmaceutical Sciences of Ribeirão Preto-USP and member of Postgraduate Committee on Basic and Applied Immunology, at Ribeirão Preto School of Medicine-USP. She has published more than 130 papers in reputed journals and serving as an editorial board member of repute.

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