



toxins



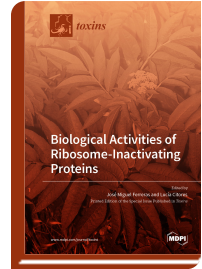
Special Issue Reprint

Biological Activities of Ribosome-Inactivating Proteins

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Ribosome-inactivating proteins (RIPs) are rRNA N-glycosylases isolated mainly from plants that catalyze the hydrolysis of the N-glycosidic bond of a specific adenosine in the sarcin-ricin loop (SRL) of the major ribosomal RNA. Because the SRL is crucial for anchoring translation elongation factors, RIPs cause inactivation of ribosomes. They have been classified into two types based on the presence (type 2 RIPs) or absence (type 1 RIPs) of a lectin chain that can turn type 2 RIPs into potent toxins, such as ricin or abrin. The biological role of these proteins is unknown, but they are thought to be a defense mechanism of some plants against pathogens and predators. Because of their enzymatic action, RIPs show several biological activities, among which antiviral, antifungal and antiproliferative activities stand out. The most promising application of RIPs is their use as a component of immunotoxins, in which RIPs are linked to antibodies that mediate their binding and internalization by malignant cells. In agriculture, RIPs have been shown to increase resistance against viruses, fungi and insects in transgenic plants. The studies collected in this book provide the reader with an overview of the most current and interesting lines of research in the field of RIPs and their applications in medicine and agriculture. Thus, the reprint includes the isolation and biological properties of some new RIPs, both type 1 and type 2, the mechanisms of toxicity of previously described RIPs and two extensive reviews, one on the antiviral activity of RIPs and the other on the strategies used to improve their pharmacological properties.



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