Abstract

The formation of reactive oxygen species (ROS) in plants is inevitable part of aerobic cellular metabolism, during which ROS are generated as by-products of basal metabolic pathways. ROS participate in many processes in plants. If the ROS are at normal level, they serve as signal molecules. Under stress, however, the ROS level in plants increases. High ROS accumulation can cause severe oxidative damage of cellular components, but simultaneously it activates other signal pathways controlling defence against oxidative stress. Plants protect themselves against increased level of ROS in different ways. Either they try to prevent increased level of ROS, or they try to detoxify them. Plants utilize for detoxification two efficient antioxidative systems - enzymatic and non-enzymatic ones. The main goal of this work is to put saccharides into context of plant non-enzymatic antioxidative system and summarize saccharides-based ROS scavenging mechanisms, which have been invented so far. Research on mechanisms of ROS scavenging is highly important, because oxidative damage through excessive production of ROS is considered to be significant cause of productivity losses in agricultural crops. These losses are likely to increase as a result of increased stress burden connected with expected climatic changes.

Key words: antioxidants, hydroxyl radical, mechanism of scavenging, reactive oxygen species, saccharides, stress