ALLERGENICITY OF PLANT DEFENSE PROTEINS

Summary

In response to direct contact with microorganisms or harmful environmental factors, plants trigger signaling pathways leading to biosynthesis of many different kinds of defense metabolites. One of the most effective ways for plants to deal with pathogenic microorganisms and insects is biosynthesis and accumulation of variety pathogenesis-related proteins (PR proteins). Among proteins which biosynthesis increases in stress conditions are also heat shock proteins (HSP). HSP are not only characteristic for plants, but in the contrary to PR proteins, they occur in all Eucaryota cells. Increased accumulation of PR proteins as well as high concentration of heat shock proteins in plant tissues favors plant resistance and facilitates formation of healthy flowers and fruits. However, some of plant's defense proteins exert allergenic properties and could cause allergic reactions in humans. Increased content of specific defense proteins in edible parts of plants results in a greater probability of abnormal immune response.

The paper discusses variety of groups of HSP and PR proteins with documented allergenic properties. Particular emphasis is placed on the cross-reactivity of allergens of similar molecular structure. Their high homology is in fact a common reason of unexpected allergic reactions after contact with substances to which the person was not originally sensitized. Knowing this kind of reactivity between seemingly unrelated to each other allergens is the basis for a new approach to plant's HSP and PR proteins as a new group of panallergens.