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Recent Progress in Research and Technology on Soybeans

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For a long time, it had been considered that soybean storage proteins play only a role as traditional nutrients and other soybean minor constituents such as isoflavones, saponins, trypsin inhibitors, phytic acid, lectin, etc., act as antinutrient factors. At present, however, these substances have all been recognized to have exciting roles in the prevention of heart disease, cancer, osteoporosis, etc. Besides these physiological effects, soybean storage proteins exhibit excellent functional properties physicochemically in food systems, such as gelation, binding, emulsification, fat and water absorption, etc. On the other hand, there are some substances having undesirable properties in soybeans, such as off-flavors, allergens, etc. Recently, there was a great progress in the research of a molecular basis on these functionalities, off-flavors, and allergenicities. By applying these results for soybean breeding, the creation of the new cultivars or lines having more improved properties is in progress. Another highlight in soybean research is the success of the crystallization of β-conglycinin and glycinin and the subsequent complete determination of their three-dimensional molecular structures through X-ray crystallographic analysis. This paper overviews these recent investgations.

Keywords: soybean, b-conglycinin, glycinin, physiological function, three-dimensional structure, isoflavone, lypoxygenase-free, allergen-less

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