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## Application of proteomic tools in assessment of soybean protein variance

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Soybean provides an economical source of protein for humans and animals. In order to address global demand, genetically modified (GMO) soybeans aiming to improve quality and yield have become prevalent. To ensure the safety of the crop for consumers it is important to determine the natural variation in seed protein constituents as well as any unintended changes that may occur in the GMO as a result of genetic modification. Understanding the natural variation of seed proteins in wild and cultivated soybeans that have been used in conventional soybean breeding programs is critical for determining unintended protein expression in GMO soybeans. In recent years, proteomic technologies have been used as an effective analytical tool for examining modifications of protein profiles. We have standardized and applied these technologies to determine and quantify the spectrum of proteins present in soybean. We used two-dimensional polyacrylamide gel electrophoresis (2D-PAGE), matrix-assisted laser desorption/ionization time of flight mass spectrometry (MALDI-TOF-TOF-MS/MS), and liquid chromatography mass spectrometry (LC-MS/MS) for the separation, quantification, and identification of different classes of soybean seed proteins. We have observed significant variations of different classes of proteins and profiled storage, allergen and anti-nutritional proteins between non-GMO, cultivated and wild soybean varieties. This information is useful for scientists and regulatory agencies to determine whether the unintended expression of proteins found in transgenic soybean is within the range of natural variation

## Biography

Savithiry S Natarajan is a Research Molecular Biologist at the Soybean Genomics and Improvement Laboratory (SGIL) of the USDA-Agricultural Research Service at Beltsville, Maryland. She is also an Adjunct Associate Professor in the Department of Plant Sciences and Landscape Architecture at University of Maryland. She received a PhD and two Masters Degrees, M.S. and M.Phil in Biology from University of Madras, India and completed Post Doctoral Fellowship (PDF) at Michigan State University, Michigan, USA. As a Lead Scientist at the SGIL, she conducts research on risk assessment and biosafety of genetically modified soybeans by applying various proteomic tools. Dr. Natarajan has authored/co-authored more than 140 scientific publications, 4 U.S. patents, 21 proceedings, 9 book chapters, 3 editorial articles, 6 trade journal articles, and 1 instructional video. She presented her work at over 60 invited talks during several conferences in Egypt, Brazil, France, India, and China. Based on her accomplishments, Dr. Natarajan received several awards including the "Best Scientist of the Year 2008" from the Governor of Maryland and a Fulbright Senior Specialist award from Bureau of Education and Cultural Affairs (ECA) of the Department of State (USA).

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