

Variability in the functional properties, amino acid composition and molecular weight distribution of the soy protein isolates obtained from six different cultivars of Punjab and Madhya Pradesh

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The soy protein isolates were prepared by isoelectric precipitation and evaluated for various functional properties such as water absorption capacity, oil absorption capacity, water solubility index, swelling power, foaming capacity, foaming stability, bulk density and least gelation concentration of different soybean cultivars SL 744, SL 958, SL 525, JS 335, JS 93-05, JS 97-52 grown in Punjab and Madhya Pradesh. The oil absorption capacity ranged from 1.86 to 2.18 g/g and highest was found to be in JS 93-05 i.e. 2.18 g/g. The water absorption capacity ranged from 0.993 to 3.67 g/g and found to be higher in JS 335 i.e. 3.67 g/g. The emulsion capacity varied from 5 to 24% and JS 335 showed the highest emulsion capacity (24%). The least gel concentration of protein isolates ranged between 12 to 16%. Foam capacity significantly varied from 3.33 to 29.80% and highest was observed in SL 958. The amino acid composition was analyzed by GC-MS and the results showed that among essential amino acid phenylalanine and histidine (14 to 16%) has the highest concentration and among non-essential amino acid tyrosine has the highest concentration (around 30%). The molecular weight determination was done through SDS-PAGE. The major portion of total soy proteins consists of glycinin (11S) and β -conglycinin (7S) proteins and the molecular weight range between 37 kDa to 42 kDa for 11S and 42 kDa to 57 kDa for 7S. The functional properties evaluation revealed that Madhya Pradesh varieties possess good functional properties as compared to Punjab varieties and among Punjab varieties SL 958 was found to be at par with Madhya Pradesh soybean varieties.

Biography

Reshu Rajput is currently pursuing PhD in the Department of Food Science and Technology at Punjab Agricultural University, Ludhiana under the guidance of Dr. Amarjeet Kaur. She has completed her Master's degree from Pondicherry University, India. She has published a research article in *Journal of Food Science and Technology* in the year 2015.