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Composition, structural and functional properties of okara protein extracts

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Okara, a by-product of soybean processing, is an underutilised cheap source of soy protein. Soy protein is increasingly popular due to its functional properties and numerous health benefits that are associated with its consumption. Therefore, okara can be considered as a renewable raw material for the extraction of proteins with considerable value for the food industry sector. The aim of this study was to investigate the possibility of optimising protein extraction from okara using phosphate buffer at different pH values and assess the effect of these buffers on the composition, structural and functional properties of the obtained protein isolates. Okara protein was extracted with 0.1 M phosphate buffer at pH values of 9 – 12. It was shown that 0.1 M phosphate buffer at pH 12 gave the highest extraction yield (approximately 35%, w/w), compared to much lower values of 4.24%, 5.4% and 12.1% obtained by using 0.1 M phosphate buffer at pH 9, 10 and 11, respectively. Moreover, the extracted isolates at pH 12 exhibited the highest solubility among other extracts at lower pH values. The results of the emulsion, foaming and water absorption capacities compared with each other except the oil absorption capacities (OAC) which decreased with increase in the pH. SEM and FTIR revealed a similar secondary structure of the isolates. SDS PAGE profile showed the okara isolates contained proteins of similar molecular weight, within the range of 7S beta-conglycinin (48-62 KDa) and 11S glycinin (20 KDa for basic subunit and 34-40 KDa for acidic subunit) proteins.

Biography

Ogemdi F Eze is a PhD student at University of Reading, United Kingdom in the Department of Food and Nutritional Sciences. She is in her second year and has interest in functional ingredients and new product development.

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