

Protein extraction from palm kernel meal

Abstract

Palm Kernel Meal (PKM) is a byproduct of palm kernel oil industry. In the last few years, Malaysia produced over two million tons of PKM annually and the byproduct is available throughout the year. Palm kernel meal contains biomaterials such as protein, cellulose and organic acids. Generally, palm kernel meal contains about 20% protein. Palm kernel protein can be extracted and purified and used as animal feed supplement or as raw material for other processes. However, with the current trend of green processes and products, palm kernel protein can be utilized for the production of formaldehyde-free wood glue. Palm kernel protein based wood glue is non-toxic as compared to conventional wood glue which is based on melamine-urea-formaldehyde resin. The extraction and utilization of palm kernel protein will definitely enhance the current usage of palm kernel meal. In this study, palm kernel protein extraction and purification were studied. The extraction of palm kernel protein was conducted using saline and alkali treatment method. For saline treatment, the extraction of protein was done under various conditions such as variation of solvent to palm kernel meal ratio, pH and salt concentration. For alkaline treatment, variation of solvent to palm kernel ratio, extraction time and extraction temperature was applied. Central composite designs of response surface methodology were used for identification of the best condition and extraction yield optimization. Result shows that over 80% of palm kernel protein can be extracted. Alkaline treatment produces better extraction yield compared to saline