

# Abstract

Curcumin is one of the most valuable bioactive compounds that show anti-microbial activity therefore, its demand is very high in market. To meet the requirement, it is necessary to extract the highest amount from sources which are available and cheap, and Turmeric is one of them. In this research, curcumin yield was increased using enzyme-assisted extraction. The sample was incubated with enzyme and checked the effectiveness of the design using Response Surface Methodology (RSM). Carrots were crushed manually, pretreated with Kemzyme<sup>®</sup> dry plus and extracted using petroleum ether. The yield was recorded by measuring absorbance from UV/Vis spectroscope. The extraction curves obtained which helped compare the results of enzyme assisted extraction with the control experiment and among one another. Four parameters studied (Enzyme Concentration, particle size, liquis-solid ratio and temperature) and optimization of the process carried out using Rotatable Central Composite Design. RCCD proved the reliability of the model giving an R<sup>2</sup> value of 0.9893. The best conditions to carry out the process concluded were 1.25% Enzyme Concentration, 5% liquid to solid ratio, incubation at 70°C for 80 mesh size particles. Kinetic study established that all experimental treatments yield better results in lesser maximum recovery time than the control. Henceforth, it was proved that the enzyme used was effective and can be used to make the process economical (reducing the need for huge energy consumption) and efficiency.