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## New Design of Experiment combined with UV-VIS Spectroscopy for Extraction and Estimation of Polyphenols from Basil Seeds, Red Seeds, Sesame Seeds and Ajwan Seeds

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### Abstract

New experimental designs for the extraction of polyphenols from different seeds including basil seed, red seed, Sesame seeds and ajwan seeds were investigated. Four variables the concentration and volume of methanol and NaOH solutions as well as the temperature and time of extraction were varied to see their effect on total phenol extraction. The temperature was varied in the range from 25°C to 200°C while the time in the range from 30 to 200 minutes. Response surface methodology was used to optimize the extraction parameters. The estimation of polyphenols was measured through phenols reduction UV-Vis spectroscopic method of phosphotungstic-phosphomolybdic acids (Folin-Ciocalteu's reagent). Calibration curve was made by using tannic acid as a polyphenols standard in the concentration range from 0.1 to 10 ppm. The regression line obtained shows the value of correlation coefficient i.e.  $R = 0.930$  and Root mean square error of cross validation (RMSEC) value of 0.0654. The Basil seeds were found containing the highest amount of total phenols i.e. 785.76 mg/100g. While the Sesame

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