

## **Dissolution of condensed tannin powder-based polyphenolic compound in water-glycerol-acid solution**

### **ABSTRACT**

Dissolution of polyphenolic compounds from condensed tannins powder from wattle species was carried out using water-glycerol mixtures and sulfuric acid (H<sub>2</sub>SO<sub>4</sub>) as a catalyst. The study focused on parameters that can be adjusted to maximize the dissolution. The parameters of the dissolution process (mass of glycerol, mass of tannin powder, temperature and stirring time) were screened using a one factor at a time (OFAT) technique, while the optimum conditions were obtained using response surface methodology (RSM). Effects of the mass of glycerol, mass of tannin powder, temperature, and stirring time used on the percentage of dissolved tannin residue was apparent. The amount of undissolved tannin was used as the direct measurement in this study since there is no established method available to test tannin dissolution in water-glycerolacid solution. The result from RSM based on 30 experimental sets showed that the lowest undissolved tannin powder value was 10% when 75 grams of tannin powder was mixed with 13.56 grams of glycerol, 86.44 grams of water, and 1.00 grams of sulphuric acid, at 75 °C temperature and 44.13 minutes stirring time.

**Keyword:** Polyphenolic compounds; Water-glycerol; H<sub>2</sub>SO<sub>4</sub>; Condensed tannin; Dissolved tannin; Dissolution parameters