

Adsorption of vanillin using macroporous resin H103

ABSTRACT

Six resins (Amberlite XAD-16, Amberlite XAD-2, Sepabeads SP207, DIAION HP-20, DM11 and H103) were tested for vanillin adsorption in aqueous solution. All of the resins gave more than 95% adsorption rate except for Amberlite XAD-2 and DM11. Resin H103 was selected for the subsequent work due to its high adsorption capacity and low cost. A kinetic analysis revealed that the adsorption process followed pseudo-second-order kinetic model and occurred rapidly. The equilibrium point was reached after 90 minutes of reaction. Adsorption isotherm was also determined at 25 °C and it was fitted to Langmuir and Freundlich equations using linear regression and non-linear regression (sum of squares) methods. The regression shows that the adsorption of vanillin onto resin H103 followed Langmuir model ($R^2 = 0.9984$) with a maximum capacity of 73.015 mg/g.

Keyword: Adsorption; Vanillin; Resin H103