**Abstract**

Our drinking water today, far from being pure, contains some 200 deadly commercial chemicals. The latest report indicates that about 15% of the total rural habitations of our country are facing many water quality problems, one mainly due to excess nitrate contamination. Nitrate contamination of ground water depends upon climate, fertilizers or manure management, soil, crop and farming systems. Infants are more susceptible to nitrate toxicity than older children or adults. The major source of intake of nitrate is drinking water. In the absence of alternate safe drinking water resources, various chemical methods are adopted to reduce nitrate levelswithin the prescribed permission limits as a preventive and control measure. The present study has identified chitin, a naturally occurring polymer to possess effective sorption capacity towards nitrate ions. The sorptive characteristics of the polymer have been studied extensively and quantitatively by employing Batch equilibration and column methods. The influence of variable factors viz., particle size, dosage, initial concentration, contact time, co-ions and temperature have been carried out to assess the efficiency of the nitrate-chitin system. Verification of the sorption isotherm viz., Freundlich, Langmuir, Tempkin have been found to fit well illustrated by the linearity of the plots. Thermodynamic parameters calculated to describe the nature of the sorption, support the feasibility of the system. Desorption studies conducted, ensures the regeneration capacity of the spent sorbent.