The kinetics and thermodynamic of adsorption of a mono-solute of chromium ions and of a bi-solute of chromium and calcium ions by fungi biomass (Streptomycine rimosus) was investigated in a batch system. The experimental data were analyzed based by Langmuir isotherm and a Pseudo second order mechanism, in the both the mono-and bi-solute adsorption systems, in order to predict the rate constant of adsorption, the equilibrium capacity. The results indicate that the adsorption mechanism is described by Langmuir isotherm and a Pseudo-second-order. The equilibrium adsorption capacity and the equilibrium rate constant increased with an increase in the initial chromium concentration in both mono-and bi-solute adsorption systems. The adsorption capacity of chromium decreased with an increase in calcium concentration