In this work, there are studied some biologically important platinum complexes, cisplatin analogues, with central platinum atom in state Pt(II), or Pt(IV). I concentrated on the hydration processes of the examined complexes. Thermodynamical and kinetical aspects of reactions were studied and NPA charge analyses were carried out, too. All computations were performed on DFT level with B3LYP functional. All reactions were considered in vacuum. Supermolecular approach was used for energy calculations.