Oxaliplatin, (trans-R,R-cyclohexane-1,2-diamine) oxalatoplatinum(II), has recently been approved for combination chemotherapy of metastatic colorectal cancer. Oxaliplatin is a platinum containing antineoplastic agent. It is thought to exert its cytotoxic action in a similar manner to alkylating agents by causing inter- and intrastrand cross links in DNA, inhibiting DNA synthesis and inducing apoptotic cell death. In vivo studies showed that Oxaliplatin has anti-tumor activity against colon carcinoma through its cytotoxic effect. Oxaliplatin analogues have been synthesized and studied. In addition, the cytotoxicity of some palladium compounds is thought to result from inhibition of DNA synthesis in cancer cells. In this paper, we are synthesized oxali-palladium with new green method (solvent is just water). This complex has been characterized by spectroscopic methods such as UV-Visible, FT-IR and H-NMR as well as conductivity measurements and CHN analysis. Also, its antitumor activity was also tested in vivo against leukemia K562 cell line.