In the present study, using three-band Kane's model including the conduction band, light and spin-orbital hole bands, the electronic states of a semiconductor quantum anti-wire is studied in presence of Rashba spin-orbital interaction and external magnetic field and compared with those of a quantum anti-wire of the same size. It's calculated the radii, height, coupling strength and magnetic field dependence of Rashba splitting for carriers respectively. It has been found for the InSb quantum anti-wire that Rashba splitting of electrons are decreased with the increasing of radius.