This thesis is focused on the determination of barbituric acid using two methods of flow analysis: flow injection analysis and sequential injection analysis, with spectrophotometric detection. Two reactions were selected for the determination of barbituric acid and different experimental conditions were optimized conditions for its determination. In the case of flow injection analysis, the concentration and flow rates of many reagents, the sample volume and the volume of the reaction coil were optimized. In the case of sequential injection analysis the same parameters except the optimum volume of the reaction coil were optimized. The optimal volume of the reaction coil was replaced by the optimum retention time in the mixing coil. Determination of barbituric acid by reaction with a nitroaniline mixture achieved a calibration range from 2,0.10-6 to 1,2.10-4 mol dm-3 and from 3,9.10-6 to 6,2.10-5 mol dm-3 using using FIA and SIA method, respectively, under the optimal conditions. Determination of barbituric acid by inhibition effect on the reaction between hydrochloric acid and bromate ions served a calibration range from 5.10-6 to 3.10-5 mol dm-3 using FIA method and 2.10-5 to 1.10-4 mol dm-3 using methods SIA under optimal conditions.