Abstract: Intracellular pH affects nearly all biochemical processes in yeast, the processes regulating the cytosolic pH includes function of many transport proteins. In this work, the impact of selected sodium transporters on cytosolic pH has been studied in two yeast species: Saccharomyces cerevisiae and Zygosaccharomyces rouxii including wild-type and mutants with affected sodium transport. Measurements of cytosolic pH and buffering capacity have been performed using fluorescent protein probe pHluorin – a pH sensitive derivate of green fluorescence protein. Several procedures for calibration of pHluorin fluorescence response have been compared and the importance of a proper correction of the calibration curve has been demonstrated. It has been shown that cytosolic pH is influenced by the function of Nha1 transport protein in S. cerevisiae as well as in Z. rouxii but not by Sod2-22 transporter in Z. rouxii. It has been demonstrated that the buffering capacity of cytosol decrease in the presence of glucose in all strains studied.