Ground and excited state proton transfer reaction of two new *o*-hydroxy Schiff bases in some protic solvents at room temperature and 77 K.

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The ground and excited state proton transfer processes of two new *o*-hydroxy Schiff bases, 7-phenylsalicylidene benzylamine (PSBA) and 7-ethylsalicylidene aniline (ESA), have been studied by means of absorption, steady state and time-resolved fluorescence spectroscopy in some protic solvents at room temperature and 77 K. The behaviour of PSBA and ESA has been investigated in neutral and basic conditions. In pure methanol and ethanol two ground state species have been detected in the case of PSBA only. These are: (1) the intramolecularly hydrogen bonded enol and (2) the species which is intermolecularly hydrogen bonded to solvent. After excitation the PSBA preferentially forms the zwitterion while the ESA undergoes excited state intramolecular proton transfer (ESIPT) to form a keto tautomer along with the zwitterion in each of the solvents studied. In the solid matrix at room temperature and at 77 K both the compounds show ESIPT. From the nanosecond measurements we have estimated the proton transfer decay rates in the case of PSBA. Our theoretical calculation at the AM1 level of approximation shows that the ground singlet state has rather large activation barrier both in the cases of PSBA and ESA. The barrier height is much lower on the corresponding excited singlet surface. The process is predicted to be endothermic in the ground state and exothermic in the excited singlet state.

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