

Selective Azo dye-based colorimetric chemosensor for F⁻ and CH₃COO⁻.

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Chelating systems that are selective and sensitive to cations and anions, as for example the fluoride, F⁻, are objectives of this work. The fluoride is important because excess in water leads to an alteration during the development of teeth, characterized by a hypomineralization of the enamel and dentin. In this condition, hypomineralized dental enamel is fragile and soft and can easily break, exposing the dentin and leading dental sensitivity and progression of caries lesions. This problem is known as fluorosis and should be identified and eliminated as a matter of public health. The structures of acceptors that use hydrogen bonding interactions have gaining importance, as are chemical interactions that can be used in isolation or not, in the design of acceptors.¹ The 2-(4-hydroxiazobenzene)benzoic acid (HABA) has two hydrogens groups available for interaction, one is the azo group and the other is the carboxylic acid group, enabling interaction with cations and anions.² However, it is seen that these ligands have possible tautomeric species according to the pH, and can generate undesirable groups. Several titrations of chromophore 2-(4-hydroxiazobenzene)benzoic acid were performed with cations (Mg²⁺, Hg²⁺, Pb²⁺) and anions (Cl⁻, F⁻, H₂PO₄²⁻, CH₃COO⁻, Cr₂O₇²⁻). However only the interactions with fluoride and acetate were significant, demonstrating the sensitivity of the ligand (HABA) by these anions, characterized by the displacement of the absorbance bands at 372 nm to 491nm. The binding constants found to Acetate and Fluoride were 6.52 x 10⁶ and 5.21 x 10⁶ mol⁻¹dm³, respectively.

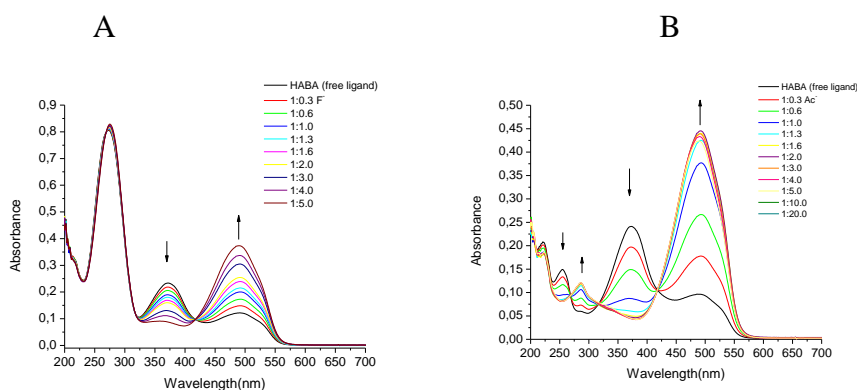


Fig.1 a) Titrations of chromophore 2-(4-hidroxiiazobenzeno) benzoic acid at 1x10⁻⁵ mol dm⁻³ with F⁻ and b) Titrations of chromophore 2-(4-hidroxiiazobenzeno) benzoic acid at 1x10⁻⁵ mol dm⁻³ with CH₃COO⁻

FAPESP.

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