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**A colorimetric aptamer biosensor based on cationic polythiophene derivative as peroxidase mimetics for the ultrasensitive detection of thrombin**

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**Abstract**

A colorimetric assay for the ultrasensitive determination of thrombin was presented, in which the cationic polythiophene derivative was used as catalyst of the 3,3',5,5'-tetramethylbenzidine (TMB)-H<sub>2</sub>O<sub>2</sub> reaction and the thrombin-binding aptamer (TBA) was used as inducing polymer's different conformation elements. It was found the cationic polythiophene derivative, poly[3-(3'-N,N,N-triethylamino-1'-propyloxy)-4-methyl-2,5-thiophene hydrochloride] (PMNT), can catalyze the oxidation reaction of TMB in the presence of H<sub>2</sub>O<sub>2</sub> to produce a blue color solution. The catalytic activity of PMNT on the TMB-H<sub>2</sub>O<sub>2</sub> reaction was closely

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