# roscopic and thermal characterization of new charge-transfer complexes of ethidium bromide with π-acceptors. In vitro biological activity studies.

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**Abstract:**

Ethidium bromide (EtBr) is a strong DNA binder and has been widely used to probe DNA structure in drug-DNA and protein-DNA interaction. Four new charge-transfer (CT) complexes consisting of EtBr as donor and quinol (QL), picric acid (PA), tetracyanoquinodimethane (TCNQ) or dichlorodicyanobenzoquinone (DDQ) as acceptors, were synthesized and characterized by elemental analysis, electronic absorption, spectrophotometric titration, IR, Raman, (1)H NMR and X-ray powder diffraction (XRD) techniques. The stoichiometry of these complexes was found to be 1:2 ratio and having the formula [(EtBr)(acceptor)]. The thermal stability of the synthesized CT complexes was investigated using thermogravimetric (TG) analyses, and the morphology and particle size of these complexes were obtained from scanning electron microscopy (SEM). The CT complexes were also tested for its antibacterial activity against two Gram-positive bacteria Staphylococcus aureus and Bacillus subtilis and two Gram-negative bacteria; Escherichia coli and Pseudomonas aeuroginosa strains by using Tetracycline as standard and antifungal property against Aspergillus flavus and Candida albicans by using amphotericin B as standard. The results were compared with the standard drugs and significant conclusions were obtained. The results indicated that the [(EtBr)(QL)2] complex had exerted excellent inhibitory activity against the growth of the tested bacterial strains.