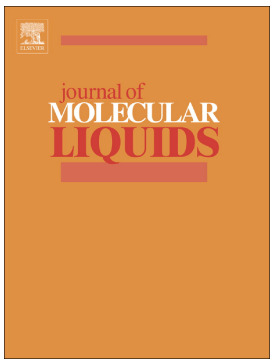

A flavonol that acts as a potential DNA minor groove binder as also an efficient G-quadruplex loop binder

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A Flavonol that Acts as a Potential DNA Minor Groove Binder as also an Efficient G-Quadruplex Loop Binder

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Abstract

A fisetin derivative, belonging to the flavonol family, has been synthesized. Fisetin is obtained from natural resources and is a very important small molecule in treating neurological disorders. The synthesized compound, 2-(3,4-diethoxyphenyl)-3-hydroxy-4*H*-benzo[*h*]chromen-4-one (abbreviated as DEPHBC) has been found to bind to the minor groove of ctDNA in contrast to fisetin, which is a DNA intercalator. However, DEPHBC can further stabilize the DNA helix. Like fisetin, DEPHBC also serves as a loop binder to G-quadruplex, but the binding is much stronger compared to many loop binders. This provides appreciable stability to G-quadruplex DNA. DEPHBC can undergo excited state intramolecular proton transfer (ESIPT) and hence exists in its normal and tautomeric (proton transferred) forms in the excited state. DNA minor