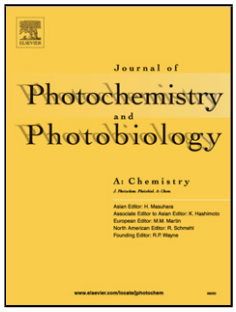

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Development of a fluorimetric method for assessing paracetamol in pharmaceuticals tablets

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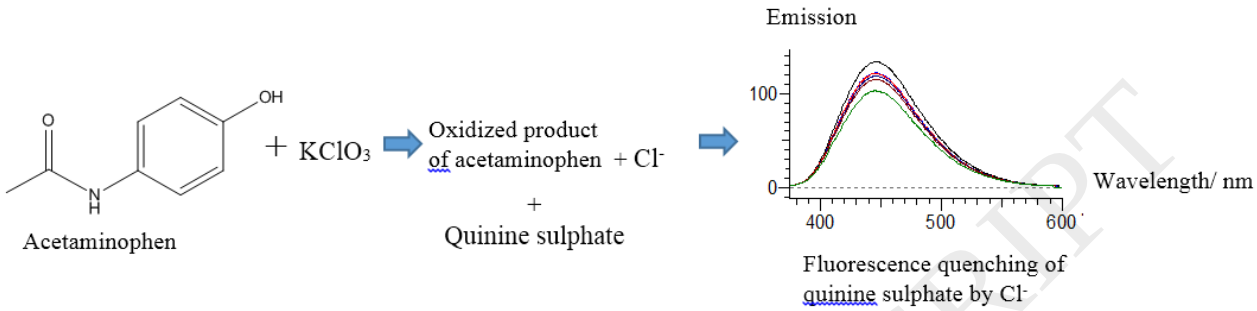
Graphical abstract



Highlights

- A new fluorescence quenching method was developed to determine paracetamol in pharmaceutical Tablets.
- There is no interference from the common excipients.
- Sensitivity of the developed method is high in the absence of chloride ions as an impurity.
- The method is reliable for the accurate determination of paracetamol.

A simple, sensitive, quick, cost effective, and reliable fluorimetric method for the determination of paracetamol has been developed. The method was based on oxidation of paracetamol by potassium chlorate in the presence of sulphuric acid followed by monitoring of the fluorescence quenching of quinine sulphate by chloride ions at the excitation wavelength of 360 nm and emission wavelength of 446 nm. The fluorescence emission was corrected with a correction factor using absorbance for every sample. All absorbances and emissions were monitored by exiting samples at λ= 360 nm with optimized conditions. There was a linear relationship between the quantum yield ratio and the paracetamol concentration, with a correlation coefficient of 0.996. The detection limit and quantification level were 56.0 ng mL^{-1} and 189.0 ng mL^{-1}, respectively. The precision and accuracy of the method were satisfactory and the standard deviation of recovery was not more than 2 %. The amount of paracetamol estimated by the developed fluorimetric method was compared with the standard method. The percentage of weights recovery of standard paracetamol from the fluorimetric method were found to be 98 to 102 % suggesting the high reliability of the developed method.