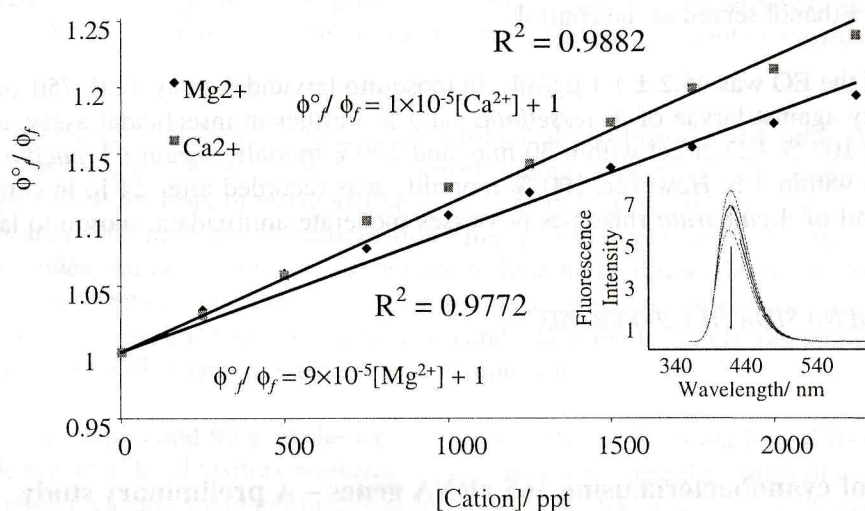


## A novel and highly sensitive fluorescence quenching method to determine Ca<sup>2+</sup> and Mg<sup>2+</sup> using ergotamine

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Ergotamine is an ergot alkaloid having a native fluorescence emission around 440 nm. Its fluorescence in MeOH/H<sub>2</sub>O (1:1) solution is quenched by the addition of either Mg<sup>2+</sup> or Ca<sup>2+</sup> ions. Ergotamine was separated out from commercially available Ergot Tables and subsequent fluorescence quenching studies were carried out at room temperature. The quenching plots between the cation i.e. Mg<sup>2+</sup> or Ca<sup>2+</sup> concentrations and the ratios of quantum yields are shown in Figure I. The quenching obeys a simple linear relationship commonly known as the Stern-Volmer quenching plot. The striking feature is the very high sensitivity of this method. The fluorescence quenching can be studied at parts per trillion levels of the investigated cations.



**Fig. 1** Plot of  $\phi^0/\phi_f$  vs. cation concentration. *Inserted* Fluorescence quenching behavior

Experiments are to obtain statistical data and to determine whether there is any interference from other ions. The observed fluorescence quenching behavior of Ergotamine can be used as an analytical method and further the slope of the Stern-Volmer plot, i.e. the rate of quenching could be used for the qualitative analysis. Adopting this method it is possible to investigate the leaching of such ions in trace levels in many biological processes and certainly have an impact on trace analysis.