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Fluorescent indicator from *Tamarindus indica* (tamarind) pod shells to detect trace levels of Hg (II) in aqueous solutions

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Hg(II) can influence the fluorescent emission of aqueous extracts of *Tamarindus indica* (tamarind) pod shells, and therefore the intensity of the emission can be utilized to determine the concentration of Hg(II) in aqueous solutions. This method can be used for a wide range of applications in environmental studies, as a cost effective method in determining Hg(II) concentration, which is a toxic pollutant.The excitation wavelength of the extract was determined using the UV-Visible absorbance spectroscopy. The fluorescence emission spectra were obtained by exciting each sample at 320 nm. The maximum emission for the tamarind water extract was observed at 409 nm. The emission intensities changed with the concentration of Hg (II) and the detection limit for Hg^{2+} was found to be 1.662 x 10 $^{-5}$ mol dm^{-3}. A plot of (I^0/I) at 409 nm vs [Hg (II)] was constructed using Stern-Volmer equation;

$$\frac{I^0}{I} = 1 + k_q \tau_0 . [Q]$$

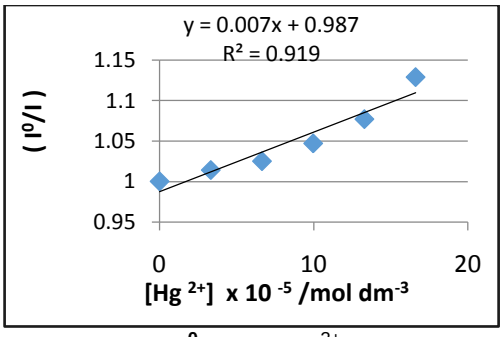

Fig1 Plot of **(I^0/I)**Vs [Hg^{2+}]

Table 1 Emission data with respect to [Hg^{2+}]

	Volume of Hg^{2+}/ µl	[Hg^{2+}]x10^{-5} /mol dm^{-3}	I (409 nm)	(I^0/I)
1	0	0.000	1977	1.000
2	200	3.324	1948	1.014
3	400	6.647	1928	1.025
4	600	9.971	1888	1.047
5	800	13.294	1835	1.077
6	1000	16.618	1751	1.129

The linearity of the plot indicates that concentration of Hg(II) is inversely proportional to the fluorescence emission intensity of samples. The tamarind water extract can be used as a fluorescent indicator to determine the trace concentrations of Hg(II) quantitatively. This is an inexpensive and effective method. The interference by different metal ions such as Na^+ and Cu^{2+} was examined under these conditions. No significant change in fluorescence was observed at 409 nm. Studies are underway to determine the molecule/s responsible for fluorescence. Keywords: Fluorescence emission, [Hg^{2+}], tamarind extract

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Acknowledgement: College of Chemical Sciences, Institute of Chemistry Ceylon

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