

INTRODUCTION

Phenol products in medicinal plant extracts, e. g. flavonoids, are of particular interest due to their antioxidant activity through scavenging oxygen radicals. The antioxidant activity of these phenol compounds is mainly due to their action as reducing agents for positively charged metal ions. In addition, they have metal chelating potentials.

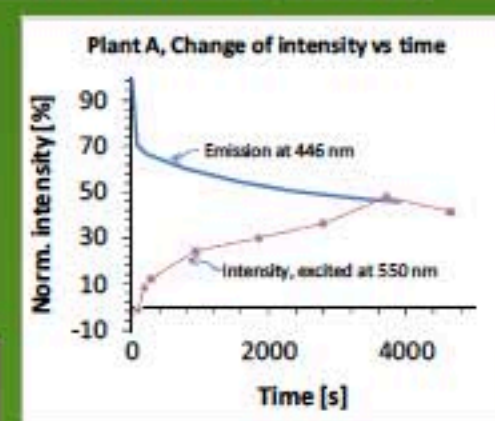
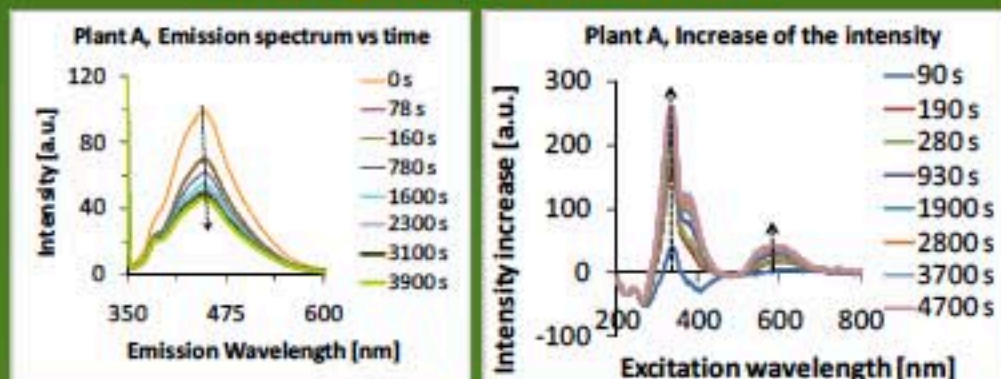
A simple, kinetic, in-situ photoluminescence study vs. time is obtained to show the reducing ability and the speeds of the reduction reaction and precipitation of the Au-nanoparticles for three medicinal plant extracts: *Andrographis paniculata* (Plant A), *Vinca rosea* (Plant V) and *Strychnos nux-vomica* (Plant S) from Western Ghats of India.

EXPERIMENTS

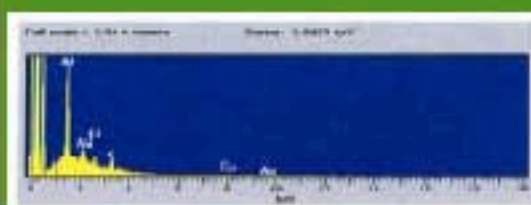
The aqueous extracts were diluted with de-ionized purified water 1:100 - 1000 for the in-situ excitation and emission measurements. The aureate-solution was added after the 1st scan at time 0 s. The scans were repeated with 70-90 s intervals. The SEM and EDS analyses to verify the particle size and composition were performed on dried particles.

RESULTS

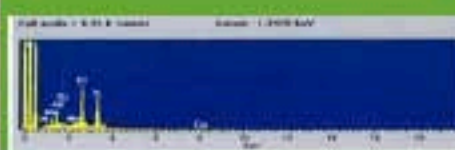
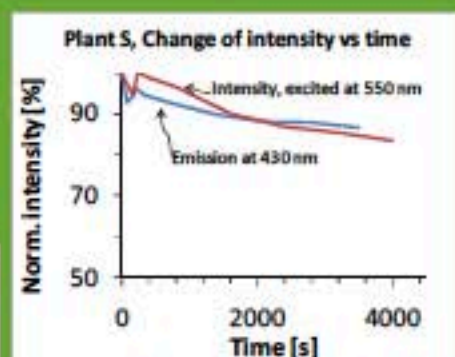
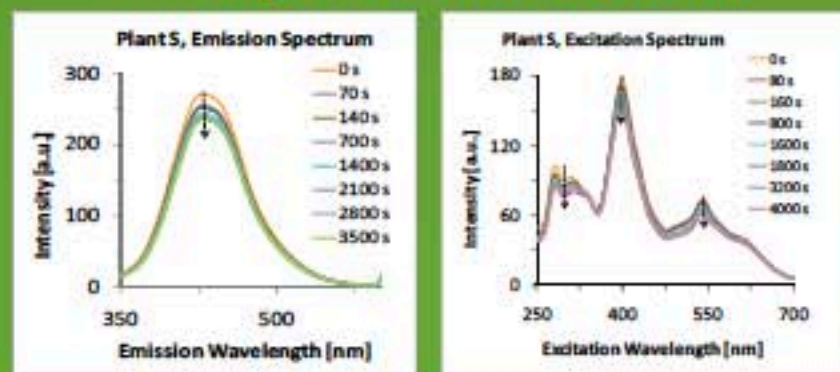
Andrographis paniculata



Kinetics of Plant extract A: The slow decrease of emission at 446 nm indicates the slow-speed reduction of the Au-ions. It coincides with the intensity increase at 550 nm, which shows the growth of the Au-nanoparticles. The size of the particles was approved by HRSEM and the composition by EDS analysis.

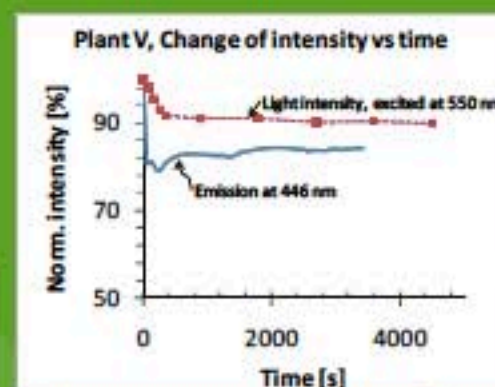
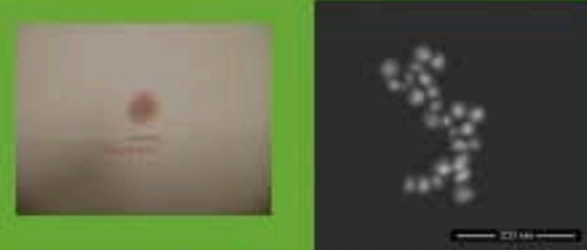
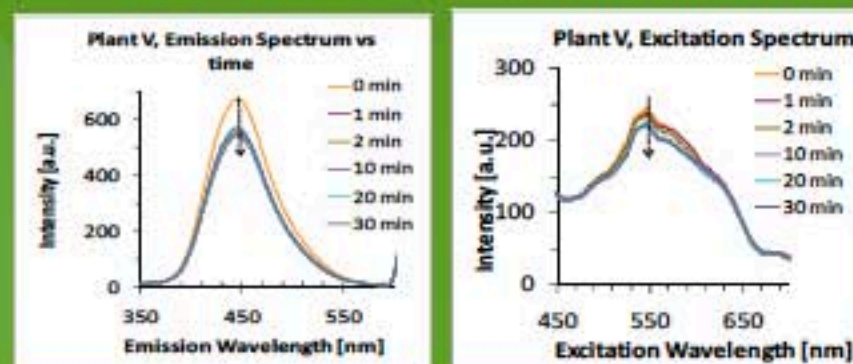


Strychnos nux-vomica



Kinetics of Plant extract S: A small decrease of emission at 430 nm coincides with the absorbance increase over the whole nm-range, indicating missing growth of Au-particles, as proved by EDS. Dendrite-structured chains were found by SEM.

Vinca rosea



Kinetics of Plant extract V: The quick (>90 s) decrease of emission at 446 nm is followed with the absorbance increase at 550 nm, both indicating a high speed of the reduction of the Au-ions to metallic Au-particles. The particle size and composition were proved by SEM and EDS.

