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Data Article

Dataset on antitumor properties of silver nanoparticles from *Gloriosa superba* (L.) seed on Dalton Lymphoma Ascites (DLA) tumor: Facile and biocompatible approach

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ABSTRACT

The dataset depicted in this article related to our earlier article entitled “Phytofabrication and encapsulated of silver nanoparticles from *Gloriosa Superba*” (Saradha Devi et al., 2017) [1], which reports the characteristic features (UV Visible spectra, FTIR, SEM, TEM, DLS, Zeta potential and XRD analysis) of the *Gloriosa superba* biosynthesised silver nanoparticles (AgNPs). In this context, the present dataset was provided to identify the antioxidant, antitumor and apoptotic (in DLA cells) properties with the synthesized AgNPs. The result enlightens the AgNPs exhibits antitumor, apoptotic activity in DLA cells and antioxidant properties. The results of the *in vivo* experiments increased life span of liver cells in DLA induced tumour mice and not showed any histopathological variations between control and DLA induced mice animals. The HPTLC examination of the *Gloriosa superba* (L.) seed extract infers the presence of colchicines derivatives as a major alkaloid sources.

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Specifications Table

Subject area	Biology
More specific subject area	Nanomedicine, Cancer
Type of data	Figures
How data was acquired	UV- Vis Spectrophotometer, Light Microscope, Flow cytometry and HPTLC analysis,
Data format	Plotted and analyzed
Experimental features	<i>in vitro</i> antioxidant assays with UV- Vis Spectrophotometer. <i>in vitro</i> antitumor assay with MTT proliferation assay, trypan blue exclusion assay and Apoptotic measurement activity (Flow cytometer analysis). <i>in vivo</i> cytotoxic studies with Swiss albino mice transplanted with DLA tumor cells. HPTLC performed with Ethyl acetate-Methanol-Water 10:1.35:1 mobile phases and captured the images at Visible light, UV 254 nm and UV366 nm.
Data source location	11° 12' 51.6528'' N and 79° 21' 40.5612'' E.
Data accessibility	Data provided as graph and accessible within article

Value of data

- The HPTLC data displays the colchicine at 254 nm (peak 9) and the 13 unknown peaks in seed extract (Fig. 1b–e).
- The antioxidant property of the seed extract and AgNPs are comparable with the vitamin C (Fig. 2).
- The flow cytometry data analysis confirms the apoptotic nature of the seed extract and AgNPs to DLA cells (Fig. 3a and b)
- The MTT assay data shows the toxicity to the DLA cell lines with IC₅₀ values of 29 µg and 21 µg for seed extract and for AgNPs respectively.
- The data analysis of the trypan blue assay exhibited the concentration dependent cytotoxic effect in DLA tumor cells with the seed extract and AgNPs (Fig. 3c and d).

1. Data

The dataset depicted in this article related to our earlier article entitled “Phytofabrication and encapsulated of silver nanoparticles from *Gloriosa superba*” [1]. The free radical scavenging properties of the *G. superba* seed extract and AgNPs were represented by DPPH, hydroxyl radical, superoxide radical, hydrogen peroxide and nitric oxide assays. The free radical scavenging efficacy of AgNPs was found to be higher than that of *G. superba* seed extract [2]. The toxicity effect of the seed extract and AgNPs on DLA tumor cells was carried out with MTT assay [3,4]. The data analysis of the *in vitro* anticancer property of *G. superba* seed extract and AgNPs were carried out with the DLA cell lines. The *in vivo* antitumor data study shows the average life span of DLA tumor bearing mice identified as 20 days, but the seed extract and AgNPs administrated animals were increased the life span up to 72 and 75 days respectively (data not shown) [5]. The histopathological data of liver section of treated and controls groups showed normal lobular architecture with intact central vein and sinusoids and normal portal triad architectures (Fig. 4).

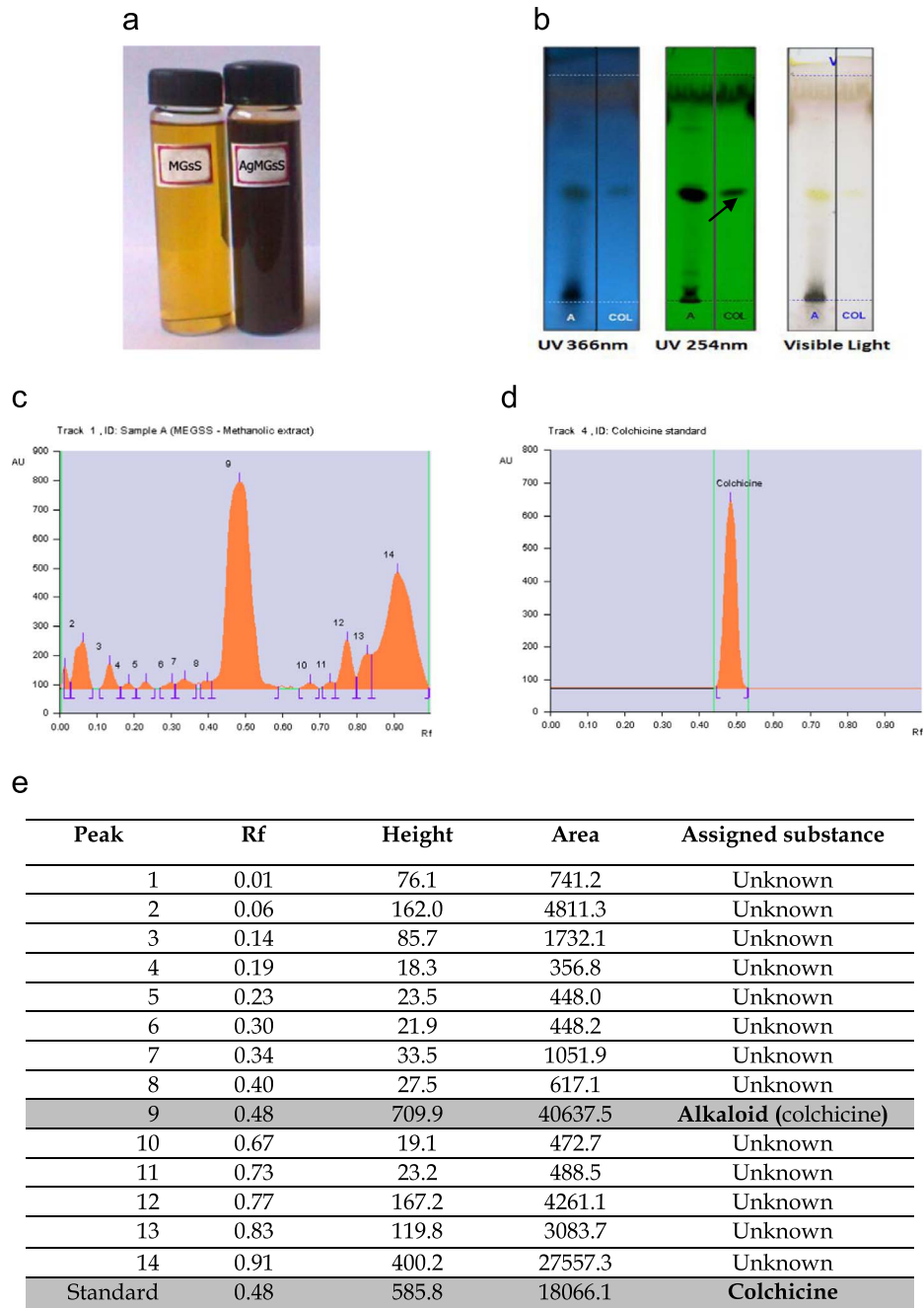


Fig. 1. (a) Methanolic extract synthesised silver nanoparticles; (b) HPTLC Chromatogram pattern of methanolic extract at 366 nm, 254 nm and visible light (The arrow indicates the presence of colchicines in the methanolic extract); (c) HPTLC densitogram of the methanol extract with eleven distinct peaks; (d) HPTLC densitogram of the standard marker colchicine; (e): HPTLC peak table of the methanolic extract.

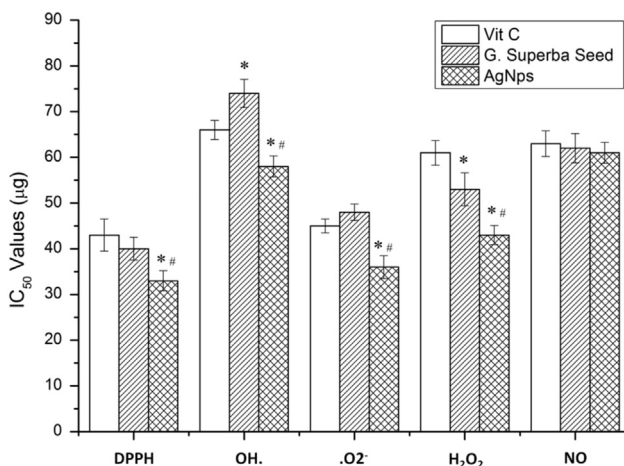


Fig. 2. Free radical scavenging assay of *G. superba* seed methanolic extract and synthesized AgNPs against DPPH, Hydroxyl, Superoxide, Hydrogen Peroxide and Nitric oxide. * $p < 0.05$ compared to Vitamin C; # $p < 0.05$ compared to *G. Superba* Seed (One way ANOVA followed by Tukey's multiple comparison test).

2. Materials and Methods

2.1. Preparation of the extract and synthesis of silver nanoparticles

Gloriosa superba seeds were collected from outskirts of Thanjavur district, Tamil Nadu province in India and authenticated. The 10 g of seeds powder was extracted with 150 ml of methanol. Then 10 ml of methanol seed extract was mixed with 90 ml of 1 mM silver nitrate solution and incubated for a period of 15 h at room temperature. The color changed from yellowish brown to dark brown color indication the formation of silver nanoparticles (Fig. 1a).

2.2. in vitro antioxidant activity

Antioxidant analysis of methanol extract of *G. superba* seed and AgNPs was evaluated by assessing their scavenging of DPPH, hydroxyl radical (OH.), Superoxide radical (.O₂)– radicals and non-radicals such as Hydrogen peroxide (H₂O₂) and Nitric oxide (NO) against the standard Vitamin C by standard protocols [6].

2.3. Antitumor activity

2.3.1. Maintenance of animals

Swiss albino mice of 5–7 weeks old (20–25 g) were bought from Animal breeding station, Kerala Agricultural University, Thrissur, India. The mice were maintained under dark/light cycle (14/10 h). The mice were acclimatized to laboratory conditions for 15 days before the commencement of the experiments. All procedures described were reviewed and approved by the University Animals Ethical Committee (Reg no: 623/02/b/CPCSEA).

2.3.2. in vitro antitumor activity

in vitro antitumor activity of methanol extract of *G. superba* seed and AgNPs was evaluated by assessing their cytotoxic effect to DLA tumor cells by MTT proliferation assay, Trypan blue exclusion assay and Apoptotic measurement activity [7].

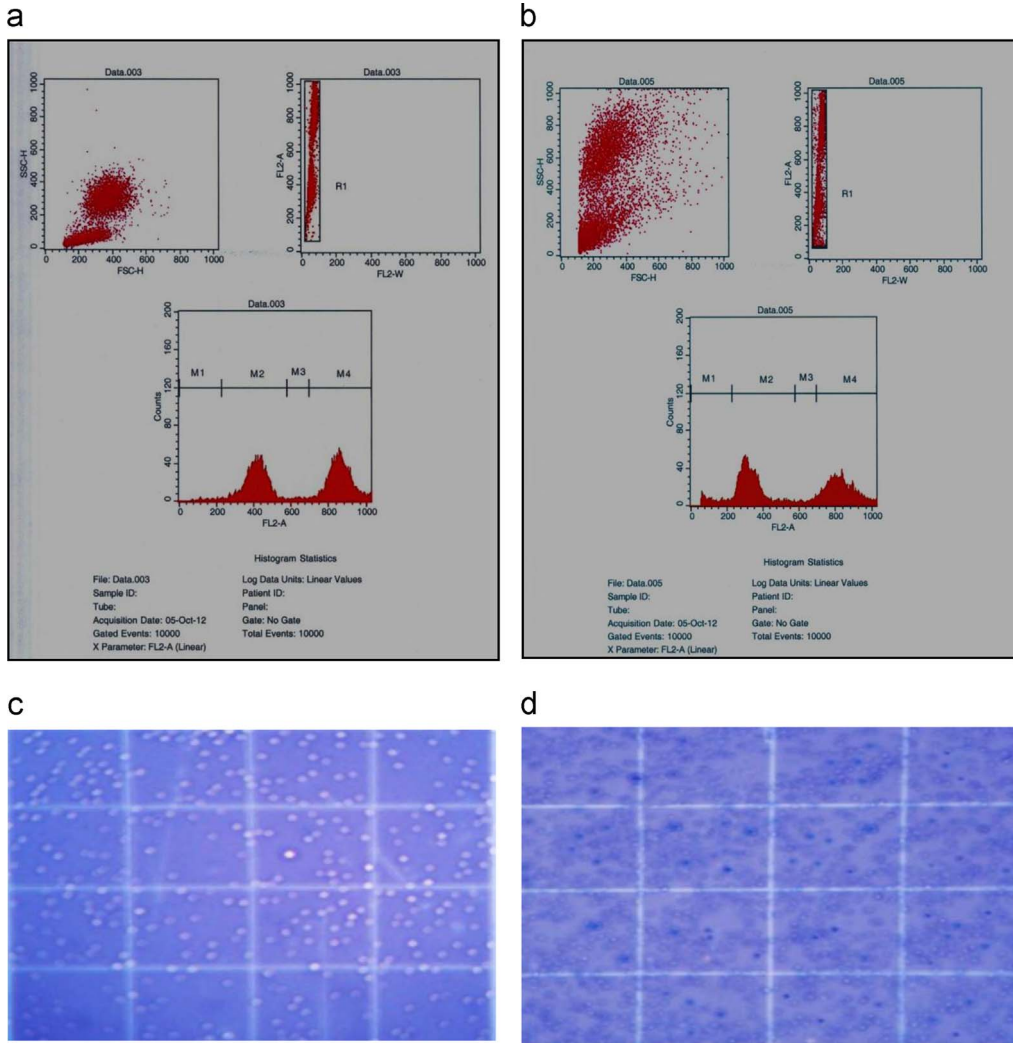


Fig. 3. Apoptotic effect of AgNPs to DLA cells by fluorescent-activated cell sorting analysis (a) DLA cells with no apoptotic effect by fluorescent-activated cell sorting analysis; (b) Apoptotic effect of AgNPs to DLA cells by fluorescent-activated cell sorting analysis; (c) DLA cell lines (Live cells appear as white round cell); (d) AgNPs treated DLA cell lines (Dead cells appear as in blue colour cells).

2.3.3. *in vivo* antitumor activity

in vivo cytotoxic studies were carried out using the ED₅₀ of methanol extract of *G. superba* seed and AgNPs to follow the antitumor activity in terms of increase in life Span and histological examination of seven groups (Groups A to G) of (6 mice/group) Swiss albino mice transplanted with DLA tumor cells [8].

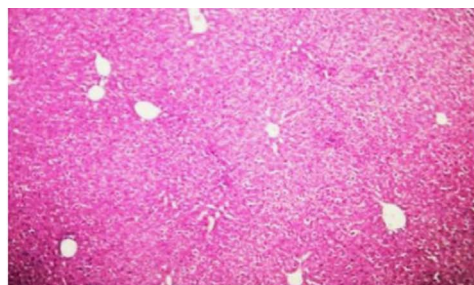
Grouping of animals.

The Swiss albino mice were divided into 7 groups with six animals in each treatment groups as follows:

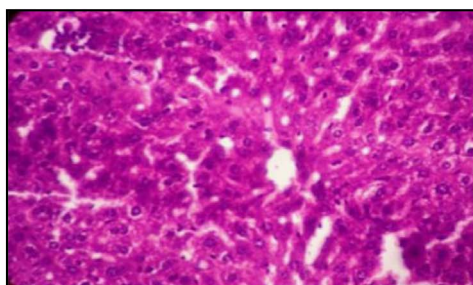
Group A: Mice received 100 μ l of PBS and served as a control;

Group B: Mice received 100 μ l of DMSO and served as vehicle control.

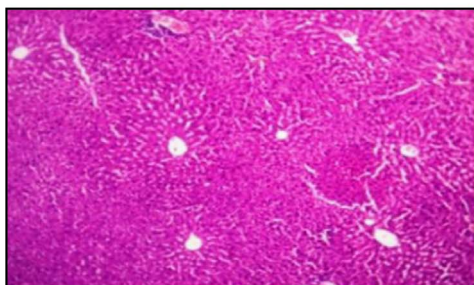
Group C: Mice received methanolic extract (33 μ g in 100 μ l (ED₅₀) of DMSO).



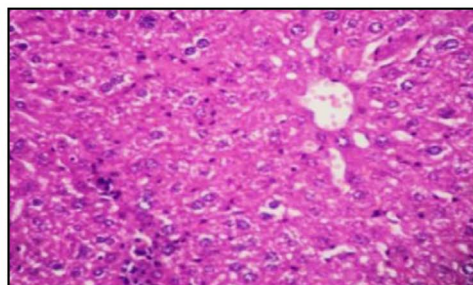
PBS



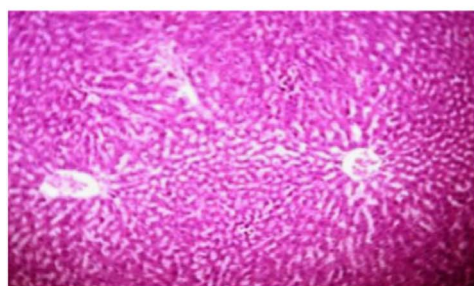
DMSO



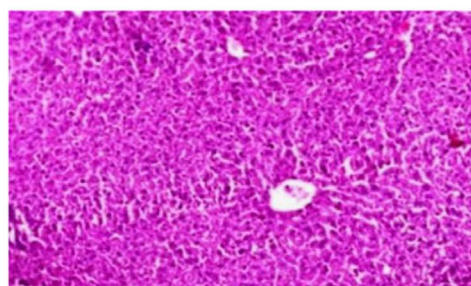
Methanol extract



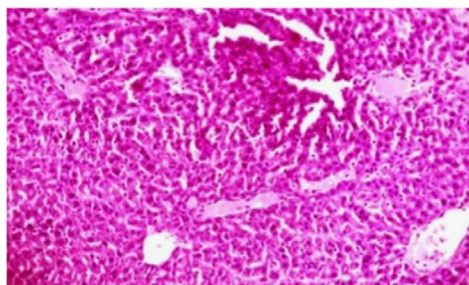
AgNPs



DLA + Metahnol extract



DLA+ AgNP



DLA

Fig. 4. Histological view of the hepatocytes of controls, methanol extract, and AgNPs treated with normal and DLA induced Swiss albino mice.

Group D: Mice received AgNPs (25 µg in 100 µl of DMSO).

Group E: Mice received one acute dose of 1×10^6 DLA tumour cells in 100 µl of PBS on the first day of the experimental period and also ED₅₀ dose of methanolic extract, throughout the experimental tenure.

Group F: Mice received one acute dose of 1×10^6 DLA tumour cells in 100 µl of PBS on the first day of the experimental period and also ED₅₀ dose of AgNPs, throughout the experimental tenure.

In Group G: Mice, tumour was induced by the administration of one acute dose of 1×10^6 DLA tumour cells in 100 µl of PBS on the first day of the experimental period.

The experiments were carried out for 20 days and 60 days. At the end of the study the mice were sacrificed after an overnight fasting. The liver was dissected, blotted of blood and washed with PBS of pH 7.2. The histological examination of the liver of all the experimental mice was carried out.

2.4. High performance thin layer liquid chromatography

The seed extract of *G. superba* was dissolved with HPLC grade methanol 100 mg/0.5 ml. The samples loaded plate was kept in TLC twin trough developing chamber with respective mobile phase (Ethyl acetate-Methanol-Water 10:1.35:1) up to 90 mm and captured the images at Visible light, UV 254 nm and UV366 nm [9].

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Transparency document. Supporting information

Transparency data associated with this article can be found in the online version at <http://dx.doi.org/10.1016/j.dib.2017.08.003>.

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