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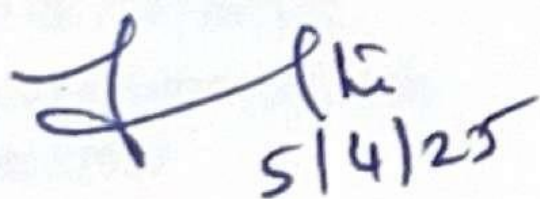
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2.	Roll No. and Year of Registration	19PHBOF004, 2020
3.	Department	Botany
4.	Name of the Research Guide	Dr. R. Karthiyayini
5.	Title of the Thesis / Dissertation	Exploring the Anti-Cancer Potential of <i>Rhododendron arboreum</i> Sm in Gastric Cancer Using <i>In vitro</i> and <i>In vivo</i> Models
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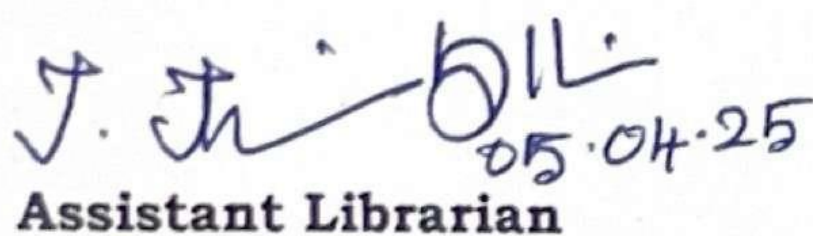
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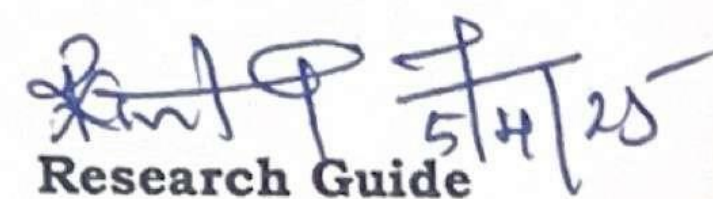
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# Exploring the Anti-Cancer Potential of Rhododendron arboreum Sm in Gastric Cancer Using In vitro and In vivo Models

by Central Library Avinashilingam

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Page count: 109  
Word count: 27,927  
Character count: 164,239  
Submission date: 05-Apr-2025 03:43PM (UTC+0530)  
Submission ID: 2347380120

### Abstract

*Rhododendron arboreum* Sm. is an evergreen small tree that belongs to the family Ericaceae, renowned for its vibrant red to pale pink flowers. Beyond its ornamental appeal, this plant has been traditionally used for its medicinal properties, with various parts of the plant employed in the treatment of human ailments. This proposed study focused on exploring the phytochemical composition, antioxidant activity and anticancer potential of *R. arboreum*, particularly against gastric cancer.

The research involved a comprehensive analysis of aqueous, methanol, ethanol, acetone, chloroform and petroleum ether extracts derived from the leaves and flowers of the plant (referred to as RLM and RFM, respectively) for qualitative phytochemical assessments. The findings revealed the presence of diverse bioactive compounds such as flavonoids, alkaloids, tannins, terpenoids, phenols, etc.. Furthermore, a quantitative analysis was carried out using methanol, ethanol and acetone extracts, selected based on the higher secondary metabolites content in qualitative results. Among these three solvent extracts, methanol extracts proved to be most effective compared to ethanol and acetone for all the secondary metabolites studied.

To elucidate the antioxidant potential of the extracts, multiple assays were conducted, viz., DPPH, ABTS, H<sub>2</sub>O<sub>2</sub>, LPO and FRAP. The results demonstrated that the leaf extracts possessed stronger radical scavenging capabilities in comparison to the flower extracts. For instance, the DPPH test showed IC<sub>50</sub> values of 56.8±1.91 µg/mL for leaves and 87.3±2.96 µg/mL for flowers. Similarly, the ABTS assay reported IC<sub>50</sub> values of 60.7±2.13 µg/mL for leaves and 65.0±1.97 µg/mL for flowers. In the H<sub>2</sub>O<sub>2</sub> and LPO tests, the leaf extracts exhibited inhibition rates of 53.5±1.36 µg/mL and 56.6±2.50 µg/mL, respectively, while for the FRAP assay the flower extracts showed slightly higher values of 57.6±2.72 µg/mL and 60.4±1.21 µg/mL. However, the FRAP assay indicated that the flower extracts had superior reducing power, with activity increasing at higher concentrations.

An *in vivo* study was conducted using C57BL/6 mice to evaluate the anti-cancer potential of *R. arboreum*, specifically its effects on tumour inhibition and immune response. Histopathological analysis of tumour tissues revealed significant