

## Abstract

### Title:

*"Neuroprotection Through Phytochemicals: An Evaluation of Caesalpinia crista's Bioactive Constituents"*

### Author

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### Background:

*Caesalpinia crista*, commonly known as "Katukarno," is a medicinal plant known for its neuroprotective effects attributed to its rich profile of bioactive compounds. Recent studies emphasize its potential in preventing and managing neurodegenerative diseases -Alzheimer's, Parkinson's, and other neuroinflammatory disorders. The neuroprotective effects of *C.crista* are largely associated with its bioactive compounds- flavonoids, terpenoids, alkaloids, and saponins, which exhibit antioxidant, & anti-inflammatory properties. These compounds help mitigate oxidative stress and inflammatory responses, two primary mechanisms contributing to neurodegeneration.

### Objective:

Identification and Extraction of bioactive compounds – Alkaloids, Terpenoids, Flavonoids and Saponins in *Caesalpinia crista* and their quantification and validation.

### Methods:

Samples- seeds, leaves and bark of *C. crista* were collected and stored. Soxhlet extraction, Cold maceration, ultrasonication techniques were used to extract bioactive compounds. Fractionation was performed by Liquid-Liquid Partition, Column and TLC on these samples. Mass spectrometry was used for identifying and characterizing the bioactive compounds. HPLC and GC were employed to quantify and validate the concentration of these individual bioactive compounds in the extract.

### Results:

Using HPLC and GC the below results were obtained for bioactive compounds of *C. crista*:

S.NO	Name of the bioactive compound	Yield obtained in mg/g
1.	Alkaloids	2.5
2.	Terpenoids	4
3.	Flavonoids	3
4.	Saponins	6

### Conclusion:

*C. crista* shows considerable promise as a natural source of neuroprotective agents, making it a potential candidate for therapeutic intervention in neurodegenerative diseases. Further research, including clinical trials, is essential to validate these findings and understand the pharmacokinetics and optimal therapeutic doses of its bioactive compounds for neuroprotection.