

# Estimation of Bioactive Compounds Presents in the Leaves and Bark Extract of *Albizia procera* Benth

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**Abstract-** *Albizia procera* Benth. is known as white Siris or tall *Albizia* widely distributed in the different parts of the word and it is known for its medicinal uses. Present investigation was designed for quantitative estimation of bioactive constituents present in *Albizia procera* Benth. methanolic leaf and bark extract. The methanolic extracts of the plants leaves and bark were screened for the presence of various phytoconstituents such as steroids, alkaloids, terpenoids, glycosides, flavonoids and carbohydrates. Quantitative estimation results shows leaves extract has (2.47 mg/g) alkaloid, (0.182 mg/g) carbohydrate, (0.16 µg/ml) protein, (0.4 mg/g) phenols, (0.18 mg/g) flavonoids, (0.98 mg/g) saponins, and (0.12 mg/g) tannins. While bark extract showed (3.5 mg/g) alkaloid, (0.2 mg/g) carbohydrate, (0.27 µg/ml) proteins, (0.51 mg/g) phenols, (0.24 mg/g) flavonoids, (1.12 mg/g) saponins and (0.19 mg/g) tannins.

**Index Terms:** *Albizia procera* Benth., Quantitative estimation, Phytoconstituents.

## I. INTRODUCTION

The genus *Albizia* comprises about 150 species widely distributed in Africa and Central and South America (Melek, *et.al.*, 2011). *Albizia procera* Benth. commonly known as Safed siris naturally occurs in India, northern Australia, southern China which also includes Hainan and Taiwan. It has also been introduced into few African countries along with Panama and Puerto Rico (Blair, *et.al.*, 1988). It is traditionally utilized as a shade tree over coffee in Cuba, 'agroforestry species' in Himachal Pradesh, India in an alley cropping system with rainfed wheat and also used as fuelwood and timber yielding plant (Srivastava, *et.al.*, 2020). The plant is known for its medicinal uses, used in anticancer, pain, convulsions, delirium and septicemia. The bark decoction is given for rheumatism, haemorrhage and is considered useful in treating pregnancy problems, for stomach-ache and sinus. The plant is reported to exhibit various pharmacological activities such as CNS activity, cardiotoxic activity, lipid-lowering activity, anti-oxidant activity hepatoprotective activity, hypoglycemic activity, etc. A part from this traditionally, leaves of *Albizia procera* were extensively used for the treatment of variety of wounds. Seeds are powdered and used in amoebiasis. It cures urinary tract infections including glycosuria, haemorrhoids, fistula and worm infestation. It also suppresses skin diseases. Fruits acts as astringent and diminishes *Kapha* and *Sukra*. In India, leaves are poulticed on to ulcers (Sivakrishnan and KottaiMuthu, 2014).

The phytochemical compounds were responsible for the reported therapeutic uses of this plant. Hence, the objective of the present study was to estimate the presence bioactive compound in the plant.

## II. MATERIALS AND METHOD

### COLLECTION OF PLANT MATERIALS

Leaves and bark of *Albizia procera* Benth. were collected from Mahur forest (N.19° 41.970' E 078° 12.149') in Nanded district of Maharashtra. Specimen were identified and authenticated by Herbarium, Department of Botany, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (Accession No.-17396). Freshly collected leaves and stem bark of the plants were dried in shade and pulverized to coarse powder. The powder was stored in an airtight container and kept in a cool, dark, and dry place (Hassan, *et.al.*, 2014; Das, *et.al.*, 2014).

### METHOD OF PREPARATION OF METHANOL EXTRACT

The extraction was done by hot continuous method using Soxhlet apparatus. The 25 gm powder of leaves and bark were extracted using 250 ml methanol for 72 hours. The methanolic extract of bark and leaves of the plants were used for the further study (Vijayalakshmi, *et.al.*, 2012).

### QUANTITATIVE ESTIMATION

Quantitative estimation of Alkaloids, Carbohydrates, Phenols, Flavonoids, Proteins, Tannins and Saponins was carried out by the following methods.

1. **Alkaloids determination-** (Harborne, 1973).

2. **Determination of Total Carbohydrates by Anthrone Method** (Hedge and Hofreiter, 1962; Sadasivam, and Manickam, 2008).
3. **Determination of total flavonoids content** (Zhishen, *et.al.*, 1999).
4. **Estimation of proteins by Lowry's method** (Lowry, *et.al.*, 1951; Sadasivam, and Manickam, 2008).
5. **Estimation of tannins** ( Schanderl, 1970; Sadasivam and Manikam, 2008)
6. **Phenols** (Mallick and Singh, 1980; Sadasivam and manickam, 1980)
7. **Saponins determination** (Igwenyi and Elekwa, 2014)

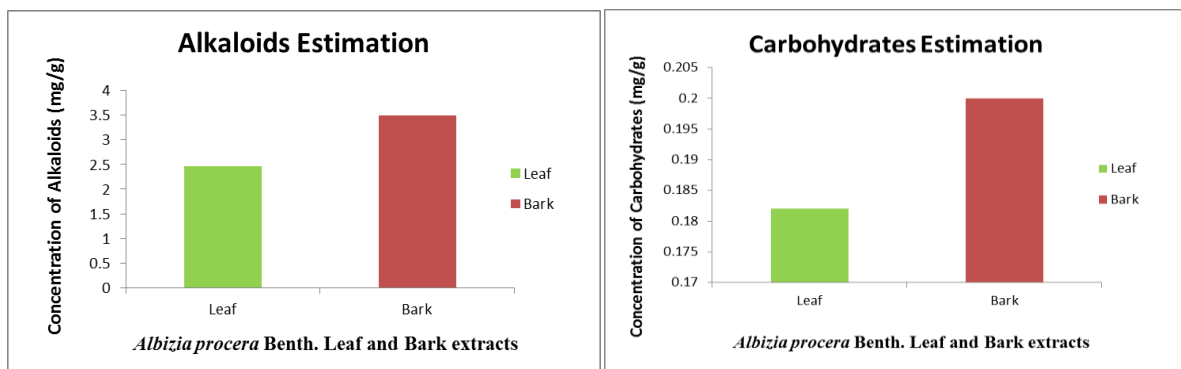
Fig 1.- *Albizia procera* Benth. Bark.Fig 2.- *Albizia procera* Benth. leaf

### III. RESULTS AND DISCUSSION

The medicinal value of plant depends upon the bioactive phytoconstituents of the plant and which shows various physiological effects on human body (Sheikh, *et.al.*, 2013). So the knowledge of phytoconstituents present in the plant can be important to detect with the help of phytochemical screening (Kumar and Hemalatha, 2013).

Chromatographic screening and phytochemical investigation of bark and leaf extract of the present plant revealed that the plant is rich in the phytoconstituents (Wankhade and Mulani, 2015). Quantitative estimation results shows leaves extract has (2.47 mg/g) alkaloid, (0.182 mg/g) carbohydrate, (0.16 µg/ml) protein, (0.4 mg/g) phenols, (0.18 mg/g) flavonoids, (0.98 mg/g) saponins, and (0.12 mg/g) tannins. While bark extract showed (3.5 mg/g) alkaloid, (0.2 mg/g) carbohydrate, (0.27 µg/ml) proteins, (0.51 mg/g) phenols, (0.24 mg/g) flavonoids, (1.12 mg/g) saponins and (0.19 mg/g) tannins.

Quantitative analysis in *Albizia procera* and other species were evaluated by number of researcher. Total phenolic content and flavonoids content were found as  $3.980 \pm 0.006$  mg/g and  $2.651 \pm 0.007$  mg/g in aerial part of *Albizia procera* ethanolic extract (Sivakrishnan, *et.al.*, 2013). *Albizia procera* methanolic, petroleum ether, carbon tetrachloride, dichloromethane, ethyl acetate and aqueous extract evaluation showed that total phenolic content was 110.73, 107.513, 32.687, 204.91, 449.18, 71.789 mg/g respectively (Khatoun, *et.al.*, 2013). *Albizia julibrissin* Durazz. leaves 60 % methanolic extract showed the presence of total phenols 140 ORAC value (Lau, *et.al.*, 2007). *Albizia lebbek* leaves and bark alcoholic extract was studied quantitatively. Leaves extract showed presence of 0.10 mg/g alkaloids, 10.45 mg/g flavonoids, 32.18 mg/g steroids, 26.92 mg/g saponins, 40.81 mg/g phenols and 30.69 mg/g tannins. While bark extract showed the presence of 0.16 mg/g alkaloids, 6.73 mg/g flavonoids, 28.35 mg/g steroids, 21.53 mg/g saponins, 33.34 mg/g phenols and 27.16 mg/g tannins (Vasanthi, *et.al.*, 2014).



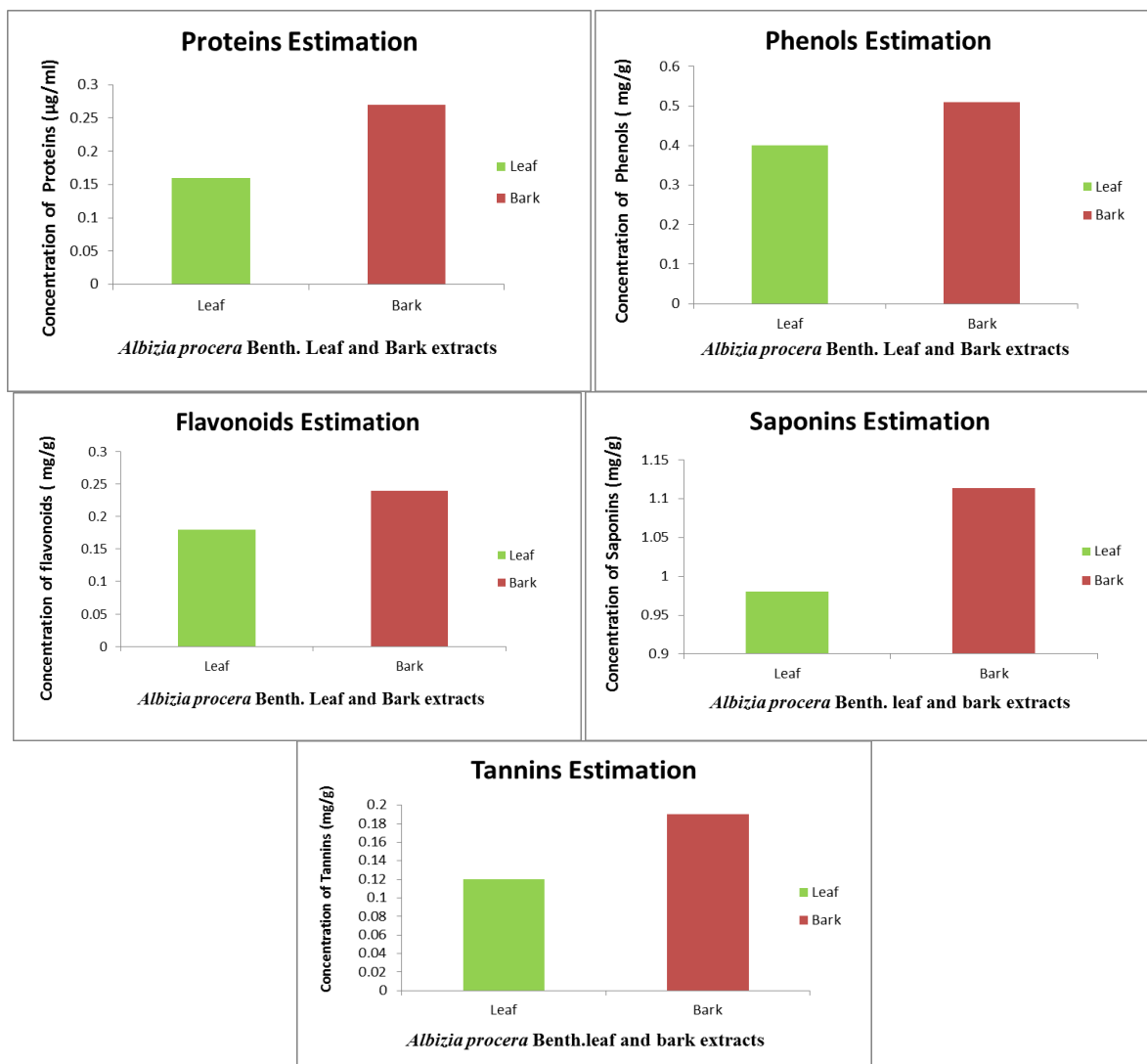


Fig. 3-Graphical representation of different bioactive constituents present in leaves and bark extracts of *Albizia procera* Benth.

#### IV. CONCLUSION

Quantitative analysis showed that plants are rich in the phytoconstituents. Quantitative estimation was carried out to correlate relationship of the secondary metabolites present in the leaves and bark extract of plant and possible biological activities to evaluate as a potential source of natural bioactive chemicals. Present investigation is useful in differentiating the species from the adulterant and act as a biochemical marker for this medicinally important plant in the pharmaceutical industry and plant systematic studies.

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