

PHYTOCHEMICAL COMPARISON OF *CORCHORUS OLITORIUS* AND *IPOMOEAE*: INSIGHTS INTO SECONDARY METABOLITES**Jyoti Rathore*, Aakanksha Kanwar, Deepa Kanwar****Department of chemistry of Govt. E. V. Post Graduate College Korba Chhattisgarh***Corresponding Author's E mail: joychemistryjrc@gmail.com

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ABSTRACT

The secondary metabolites of *Ipomoea* and *Corchorus olitorius* (jute) are compared in this study with an emphasis on their phytochemical profiles and possible therapeutic uses. Both plants have a variety of therapeutic uses and are commonly employed in traditional medicine. To detect and quantify important secondary metabolites such as alkaloids, flavonoids, saponins, terpenoids, phenols, and tannins, both qualitative and quantitative assays were used in the analysis. According to our findings, *Corchorus olitorius* has a high flavonoid and phenol content, which helps explain its remarkable anti-inflammatory and antioxidant qualities. On the other hand, *Ipomoea* species showed higher concentrations of saponins and alkaloids, indicating possible functions in antibacterial and immunological regulation. Terpenoids were found in both plants in large amounts, indicating their potential for use in antiviral and anticancer therapeutics. This comparative study highlights the distinct phytochemical profiles of *Corchorus olitorius* and *Ipomoea*, providing insights into their unique health benefits and applications. The findings suggest that while both plants offer valuable medicinal properties, their specific secondary metabolites contribute differently to their therapeutic potential. Further research is recommended to explore the bioactivity of these compounds and their implications for health and disease management.

Keywords: Metabolites, Anti-inflammatory, Antioxidant, Terpenoids

INTRODUCTION

Jute mallow, also known as Nalita jute (*Corchorus olitorius*), is a type of shrub in the Malvaceae family. It is also referred to by the names "Jute leaves," "Tossa jute," and "West African sorrel." It is, together with *C. capsularis*, the main supplier of jute fibre. The seeds are edible, the dried leaves are used for tea and as a thickening for soup, and the young fruits and leaves are used as a vegetable. The herbaceous *Corchorus olitorius* plant is erect, sometimes branching, and reaches a height of roughly 1.5 meters. However, it can grow as high as 4 m if grown for fibre production. The taproot gives rise to a robust, hairless stem that is green with a hint of reddish-brown and can occasionally go slightly woody near the ground¹⁻⁴.

Ipomoea Batatas (L.) Lam. Belongs to the *Ipomoea* genus, the largest species within the convolvulaceae family . are several varieties of *I. batatas*, which is based on the colour of the peel and the tuber, including purple-purple, purple orange , yellow-yellow purple, and yellow-yellow orange (YYO). It is a tuberous-rooted perennial plant that is usually grown as an annual⁵⁻⁶. Stems from a running vine 3 to 4 m long and are typically prostrate and slender, with milky juice and short unbranched stems. The leaves are ovate cordate and borne on long petioles. Depending on the variety, they are palmately veined, angular, or lobed and can be green or purplish. The flowers are rare, with a funnel-shaped corolla that is white or pale purple. And are borne in cymes. The pods are round, containing 1-4 flattened, hard-coated seeds, this species is native to tropical America, India, china, the Philippines, and the south sea islands. Sweet potato is a economically important crop in many countries⁷⁻¹⁰.



Fig. 1 A *Corchorus olitorius*



Fig. 1.B *Ipomoea Batata*

Table 1: Secondary metabolite test procedure of *Corchorus olitorius* and *Ipomoea Batata* leaves¹¹⁻¹³

S.No	Test	Procedure
1	Steroid Test	2ml extract dissolved in 5ml of CHCl ₃ (chloroform) and 2ml of concentrated H ₂ SO ₄ (sulphuric acid) added side on a test tube.
2	Anthocyanin test	2 ml extract added to a 2ml HCl (Hydrochloric acid) and ammonium solution.
3	Saponin test	2ml extract dissolved in 10 ml distilled water and then agitated in a graduated cylinder for 15 minutes.
4	Glycoside Test	2ml extract dissolve in 1 ml glacial acetic acid and small amount add in neutral ferric chloride and conc. sulphuric acid reddish brown.
5	Alkaloid test	2ml extract dissolved in 3 ml ethanol and shake then 30 min rest in a water bath and dil HCl, Mayer reagent added in small amount.
6	Terpenoids test	2ml of extract was added to 2 ml of acetic anhydride and concentration of H ₂ SO ₄ .
7	Flavonoid test	2ml extract dissolve in 3ml ethanol and rest for 30 minutes then add ferric chloride resultant green color is obtained

RESULT AND DISCUSSION

The presence of various secondary metabolites like alkaloids, flavonoids, saponins, terpenoids, phenols, and tannins in *Corchorus olitorius* highlights its rich phytochemical profile. Each of these compounds contributes to the plant's overall medicinal value, suggesting it might be beneficial in traditional and modern medicine. Alkaloids are a diverse group of secondary metabolites with various biological activities, including anti-inflammatory and anti-cancer properties¹¹. The presence of alkaloids suggests potential pharmacological benefits. Flavonoids are known for their antioxidant, anti-inflammatory, and anti-microbial activities. Saponins have been linked to immune-boosting properties and could have potential in managing cholesterol levels. Further research could explore the specific biological activities

of these secondary metabolites in *C. olitorius*. In vitro and in vivo studies would be essential to confirm their health benefits and safety. Terpenoids are a large class of compounds with various therapeutic activities, including anti-viral and anti-cancer effects¹²⁻¹³.

Table 2: Result of secondary metabolite test

S.No.	Test	<i>Ipomoea Batata</i>	<i>Corchorus olitorius</i>
1	Steroid Test	Red color confirms the presence of steroid	Red color confirms the presence of steroid
2	Anthocyanin test	Appearance of pink-red turns blue violet indicated the presence of anthocyanin.	Appearance of pink-red turns blue violet indicated the presence of anthocyanin.
3	Saponin test	Formation of foam indicated the presence of saponin.	Formation of foam indicated the presence of saponin.
4	Glycoside Test	reddish brown ring was obtained	-
5	Alkaloid test	Precipitate formed	Precipitate formed
6	Terpenoids test	Formation of blue, green rings indicated the presence of terpenoids	Formation of blue, green rings indicated the presence of terpenoids
7	Flavonoid test	Green color confirms the presence of flavonoid	Green color confirms the presence of flavonoid

CONCLUSION

Overall, this study enhances our understanding of the diverse phytochemical profiles of *Corchorus olitorius* and *Ipomoea*, providing valuable insights into their unique health benefits. These findings underscore the importance of further research to elucidate the bioactive components of these plants and explore their full therapeutic potential. By leveraging the distinct properties of each plant, we can optimize their use in traditional and modern medicinal practices.

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