

colour indicates the presence of flavonoids [Peach K., Tracey MV. 1956].

Shinoda Tests: 2-3 ml. extract and few fragments of magnesium metal were added into a test tube, followed by dropwise addition of concentrated HCl. Formation of magenta colour indicates the presence of flavonoids [Kokate C. K. *et al.*; 2001].

NaOH Tests: 2-3 ml. of extract and few drops of sodium hydroxide solution were added into a test tube. Formation of intense yellow colour that became colourless on addition of few drops of dilute HCl indicates the presence of flavonoids [Khandelwal K.R., 2008].

Test for Glycosides

Keller-Killani Test: Glacial acetic acid was added into 2 ml. extract and one drop 5% FeCl₃ and conc. H₂SO₄. Reddish brown color appears at the junction of the two liquid layers and the upper layer of bluish green indicates the presence of glycosides [Kokate C. K. *et al.*; 2001].

Glycosides test: 1 ml. water was added into the small amount of extract and shaken well. Then aqueous solution of NaOH was added. The appearance of yellow colour indicates the presence of glycosides [Treare GE, Evans WC. 1985].

Concentrate H₂SO₄ Test: 2ml. glacial acetic acid, one drop of 5% FeCl₃ and conc. H₂SO₄ were added into 5ml extract, the appearance of brown ring indicates the presence of glycosides [Khandewal K.R., 2008].

Molisch's Test: 2 drops of Molisch's reagent was added into 1 ml of extract, and 2 ml of concentrate H₂SO₄ was added carefully into above solution. Formation of violet ring at the junction indicates the presence of glycosides [Kokate C. K. *et al.*; 2001].

Test for Phenols

Ellagic Acid Test: The test solution was treated with few drops of 5% (w/v) glacial acetic acid and 5% (w/v) NaNO₂ solution. The solution turned muddy or niger brown precipitate occurred in the extract. It indicates the presence of phenols solution [Gibbs R.D., 1974].

Phenol Tests: 0.5 ml of FeCl₃ (w/v) solution was added into 2 ml of test solution, formation of an intense colour indicates the presence of phenols [Gibbs R.D., 1974].

Test for Lignins

Lignin test: 2 ml of 2% (w/v) furfuraldehyde was added into the test solution. Formation of red colour indicates the presence of lignin [Gibbs R.D., 1974].

Labat test: The test solution was mixed with gallic acid; it developed olive green colour indicating the positive reaction for lignins [Gibbs R.D., 1974].

Test for Saponins

Foam Test: The extract was diluted with 20 ml of distilled water and was shaken in a graduated cylinder for 15 minutes. A 1 cm. layer of foam, indicates the presence of saponins [Kokate C. K. *et al.*; 2001].

Haemolysis Tests: One drop of extract and one drop of blood was placed on the glass slide. Hemolytic zone appeared [Kokate C.K., 1994].

Test for Sterols

Liebermann-Burchard Test: Chloroform was mixed into 2ml. extract. 1-2 ml. acetic anhydride and 2 drops of concentrated H₂SO₄ were dropped into the test tube. First red, then blue and finally green colour indicates the presence of sterols [Kokate C. K. *et al.*; 2001].

Salkowski's Test: 2ml chloroform and 2 ml concentrated H₂SO₄ were added to the 2 ml extract and shook well. The layer of red chloroform and acid shows greenish yellow fluorescence. It indicates the presence of sterols [Kokate C. K. *et al.*; 2001].

Test for Tannins

Gelatin Test: Gelatin (gelatin dissolves in warm water immediately) solution was added into the extract. Formation of white precipitate indicates the presence of tannins [Treare GE, Evans WC. 1985].

Lead acetate test: Few drops of 10% lead acetate solution were added into 5 ml of extract. Formation of yellow or red precipitate indicates the presence of tannins [Treare GE, Evans WC. 1985].

Table 1: Phytochemical Screening of *Datura Stramonium* L. Leaves

Test	Petroleum Ether	Chloroform	Methanol	95% Ethanol	Distilled water
Alkaloids					
Iodine Test	-	-	-	-	-
Wagners Test	-	-	-	-	-
Dragendorff's Test	-	-	-	-	-
Flavonoids					
Pews Test	-	-	-	-	-
Shinoda Test	-	-	-	-	-
NaOH Test	-	-	-	-	-
Glycosides					
Keller- Killani Test	-	-	+	+	+
Glycosides Test	-	-	+	+	+
Conc. H ₂ SO ₄	-	-	+	+	+
Molishs Test	-	-	+	+	+
Phenol					
Ellagic Test	-	-	+	+	-
Phenol Test	-	-	+	+	-
Lignin					
Lignin Test	-	-	+	+	-
Labat Test	-	-	+	+	-
Saponins					
Foam Test	-	-	+	+	+
Haemolysis Test	-	-	+	+	-
Sterols					
Liebermann- Burchard Test	-	+	+	+	-
Salkowski Test	-	-	+	+	-
Tannins					
Gelatin Test	-	-	+	+	-
Lead Acetate Test	-	-	+	+	-

[+Presence, - Absent]

RESULT AND DISCUSSION

The plant leaves were powdered and subjected to cold percolation with petroleum ether, chloroform, methanol, 95% ethanol and distilled water for 48 hours. The results of the phytochemical screening of leaves extract of *Datura stramonium* were present in Table-1. Different types of secondary metabolites such as glycosides, phenol, lignins, saponins, sterols and tannins were presented. *Datura stramonium* L. is very effective compared to other part because most parts of secondary metabolites are present in it [Table-1]. Tannins have general antimicrobial and antioxidant activities [Rievere et al., 2009].

Current reports show that tannins may have potential value such as cytotoxic and antineoplastic agents [Aguinaldo et al., 2005]. Saponins have antifungal properties [Aboada and Efuwape, 2001]. These contents are shown in different types of activities against different pathogens. Therefore, it can be used in the treatment of diseases.

Saponins are used in hypercholesterolemia, hyperglycemia, antioxidant, anticancer, anti-inflammatory and weight loss etc. according to medical field. It is a bioactive antibacterial agents of plants [Mandal et al., 2005; Manjunatha, 2006].

Plant steroids have cardiogenic activity, possess insecticidal and antimicrobial properties. It is generally used in herbal medicines and cosmetic products [Callow; 1936].

Phenolic compounds have anti-oxidative, antidiabetic, anticarcinogenic, antimutagenic and anti-inflammatory (Arts and Hollman; 2005, Scalbert et al.; 2005).

CONCLUSION

Datura stramonium L. has different types of medicinal properties. Medicinal properties depend on different types of secondary metabolites that have been presented in my phytochemical secondary metabolites study. These secondary metabolites were glycosides, saponin, lignin, phenol, sterols and tannins. These secondary metabolites have anti-bacterial, anti-viral, anti-fever, anti-diabetes, anti-cancerous activities etc. Therefore, it can involve in medicinal plant categories.

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