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Comparative phytochemical screening of morphotypes of *Thevetia peruviana* (Pers.)

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Abstract
The present investigation deals with the comparative phytochemical screening of different morphotypes of *Thevetia peruviana* (Pers.), which is one of the important medicinal as well as ornamental plant belongs to the family Apocynaceae and commonly called as yellow oleander or pili kaner. On the basis of flower colour, the Apocynaceae member *Thevetia peruviana* (Pers.) can be grouped into three morphotypes, viz. yellow, orange and white.
The aerial parts (flowers and leaves) of different morphotypes of *Thevetia peruviana* (Pers.) were taken and subjected to extraction with ethanol (95%) and water separately. The ethanolic (95%) extracts were screened for qualitative determination of different secondary metabolites. Preliminary phytochemical screening of ethanolic flower and leaf extracts of different morphotypes showed the existence of bioactive compounds such as alkaloids, flavanoids, glycosides-cardiac glycosides, phenolic compounds, tannins, phytosterols, carbohydrates, proteins and amino acids while fixed oils, fats, gums and mucilages found absent in all the three tested morphotypes.

Keywords: *Thevetia peruviana* (Pers.), morphotypes, bioactive compounds, phytochemical screening and secondary metabolites

Introduction
Plants play a vital role for existence of life on earth and the use of plants as a source of medicine is as old as humanity. Practice of indigenous medicine is one of the advancing frontiers of medical science.
Thevetia peruviana (Pers.) is an evergreen plant of family Apocynaceae, native to Tropical America. It is an evergreen and glabrous small tree with 3-6 m height. The leaves are simple, glabrous and narrowed at both ends. The flowers are bright yellow and are borne in few-flowered cymes. (Kaushik and Dhiman, 1999) [7]. The plant is bitter, pungent, acrid, hot, astringent to the bowels, useful in urethral discharge, worms, skin diseases, leucoderma, wounds, piles, eye trouble, itching, fever and bronchitis. (Kirtikar and Basu, 1981) [8]. the cardiac glycosides obtained from bark, kernals and flowers are useful for heart diseases. (Prajapati *et al*, 2007) [12]. Leaf decoction is given to prevent conception. (Retnam and Martin, 2006) [13]. The root of this plant are made into a paste and applied to tumours. (Singh and Dey, 2005) [16]. Seeds used as an abortifacient and purgative in rheumatism and dropsy; also used as an alexeteric. (Ambasta, 1986) [6].
The present study was carried out to characterize the bioactive constituents in (flower and leaf) morphotypes of *Thevetia peruviana* (Pers.).In present research work three morphotypes of *Thevetia peruviana* (Pers.) are selected.
Morphotype I - *Thevetia* Yellow
Morphotype II - *Thevetia* Orange
Morphotype III - *Thevetia* White

Material and methods
For present investigation the plant material of *Thevetia peruviana* (Pers.) yellow and orange flowers and leaves were collected from Devi Ahilya Vishwavidyalaya campus, Indore and white flowers and leaves were collected from Nehruvangram, Indore. The collected plant material was identified with the help of Flora of Madhya Pradesh (Mudgal *et al.*, 1997) [11]. To obtain ethanolic extract 100 gms of shade dried plant material was extaract with 500 ml of ethanol (95%) in "Soxhlet Extraction apparatus". Finally the prepared plant was macerated with water for 24 hrs. To obtain aqueous extract. The extract was concentrated by distilling off the solvent (Kokate, 1994; Kokate *et al.*, 1993) [9, 10]. The extract thus obtained was than subjected to preliminary phytochemical screening for identification of various plant constituents by methods suggested by (Finar, 1962; Farnsworth 1966; Harborne *et al.*, 1979) [2, 3, 4]

Result and Discussion

Preliminary phytochemical screening of ethanolic extracts was performed in different parts (flower and leaf) of *Thevetia peruviana* (pers.).The results of preliminary phytochemical screening were given in Table No.1.It shows that there were no differences observed in the phytochemical constituents of the all the three tested morphotypes. The presence of alkaloids, flavanoids, glycosides-cardiac glycosides, phenolic compounds, tannins, phytosterols, carbohydrates, saponins, proteins and amino acids was noted in the observation while fixed oils, fats, gums and mucilages found absent in all the three tested morphotypes.

Among the carbohydrates glucose, fructose and lactose were reported in the ethanolic flower and leaf extracts, while galactose was totally absent. Starch is present only in leaf extracts and absent in flower extracts.

Table 1: Preliminary phytochemical screening of ethanolic extracts (flower and leaf) of morphotypes of *Thevetia peruviana* (Pers.)

S. No.	Plant Constituents Test/Reagents used	Ethanolic Extract					
		YF	OF	WF	YL	OL	WL
1.	**Alkaloids**						
	Mayer's reagent	+	+	+	+	+	+
	Dragendorff's reagent	+	+	+	+	+	+
	Hager's reagent	+	+	+	+	+	+
	Wagner's reagent	+	+	+	+	+	+
2.	**Carbohydrates**						
	Molisch's reagent	+	+	+	+	+	+
	Bendict's reagent	+	+	+	+	+	+
	Fehling solution	+	+	+	+	+	+
3.	**Types of Carbohydrates**						
	Glucose	+	+	+	+	+	+
	Fructose	+	+	+	+	+	+
	Galactose	-	-	-	-	-	-
	Lactose	+	+	+	+	+	+
	Starch	-	-	-	+	+	+
4.	**Phytosterols**						
	Liebermann-Burchard's test	+	+	+	+	+	+
5.	**Terpenoids**						
	Salkowski reaction	+	+	+	+	+	+
6.	**Fixed oils and fats**						
	Spot test	-	-	-	-	-	-
7.	**Saponins**						
	Foam test	+	+	+	+	+	+
8.	**Phenolic compounds**						
	Ferric chloride solution	+	+	+	+	+	+
9.	**Tannins**						
	Lead acetate solution	+	+	+	+	+	+
10.	**Proteins**						
	Biuret test	+	+	+	+	+	+
	Xanthoprotic test	+	+	+	+	+	+
11.	**Amino acids**						
	Ninhydrin reagent	+	+	+	+	+	+
12.	**Gums and mucilages**						
	Alcoholic precipitation	-	-	-	-	-	-
13.	**Flavanoids**						
	Shinoda test	+	+	+	+	+	+
	Lead acetate test	+	+	+	+	+	+
14.	**Cardiac glycosides**						
	Killer kiliani test	+	+	+	+	+	+

YF, OF, WF = Flower extracts of *Thevetia* yellow, *Thevetia* orange, *Thevetia* white.
YL, OL, WL = Leaf extracts of *Thevetia* yellow, *Thevetia* orange, *Thevetia* white.

Conclusion

From this observation it can be concluded that the three tested morphotypes shows uniform phytochemical constituents, so that any one morphotype can be used as a substitute for other in curing diseases.

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