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Phytochemical characteristics of Ichnocarpus frutescens. (L) R.Br

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ABSTRACT:

The roots of *Ichnocarpus frutescens* (L) R.Br. (Apocynaceae) are used in indigenous system of medicine . The present study on phytochemical characteristics of root powder,namely behaviour with different chem ical reagents, fluorescent beha viour, extractive values, colour and consistency and qualitative phytochemical st udies are useful for identification and conformation of its authenticity.

INTRODUCTION:

Ichnocarpus frutescens (L) R.Br. (Apocynaceae) is a climbing plant called 'Sarivaa' in Sanskrit, 'Kalidudh' in Hindi, 'Paravalli' in Malayalam and Udarkodi or illu – katta in Tamil. It is typically found in village surroundings and hedges. Roots are used as a demulcent, alterative, tonic, diuretic, diaphoretic and is used as a substitute for Indian Sarasaparilla (*Hemidesmus indicus*).[1-3] It appears that there is no report in the literature concerning the phytochemical studies on the chloroform extract of roots of *I. frustescens.* In the present study, behaviour of root powder with different chemical reagents, fluorescent behaviour, extractive in the chloroform values, colour and consistency and preliminary phytochemical studies were made.

MATERIALS AND METHODS:

Fresh roots of *I. frutescens* was collected in the month of August 2005 by digging, from its natural place of occurrence (wild) in Mundur, a semi urban village,14 km from Palakkad town, to ward's north and about 110 MSL. The identification of the plant material was confirmed at Botanical Survey of India, Coimbatore.

Commercially available samples (market samples) were bought from the raw drug vendors in Palakkad town. The roots were air dried, powdered by milling and stored at 10 ^{0}C.

Extractive values were determined by sequential extraction of the root powder with hexane, chloroform and water. Colour and consistency of each extract was also noted. [4] The behaviour of root powder with different chemical reagents was studied. [6&7] Fluorescent characters of root powder were observed under UV light at 254nm and visible light [7.]

Preliminary qualitative analysis of chloroform extract of roots of *I. frutescens*

was also performed by using specific reagents[4&5] mentioned in standard procedures. The results from the wild and commercial *I. frutescens* were compared and concluded.

RESULTS AND DISCUSSIONS:

The extractive values of root powder obtained after sequential extraction, their colour and consistency are given in Tables1&2.The behaviour of the powdered root with different chemical reagents are shown in Table3.Fluorescent behaviour of the plant powder is tabulated in Table 4.

The antibacterial activity of hexane, chloroform and water extracts was studied by filter paper disc diffusion assay on *B.pumilis* and *E.coli.* Chloroform extract of *I. frutescens* showed considerable inhibition on *B. pumilis* and *E.coli.* Hence the present study was narrowed down to chloroform extract only. The results of preliminary phytochemical tests for active constituents are shown in Table5 which indicate the presence of alkaloids, flavonoids, terpenoids and glycosides.

The information obtained on the extractive values, the colour and consistency of various extracts of roots, the behaviour of root powder with various chemical reagents, fluorescence characteristics and qualitative preliminary chemical tests are useful phytochemical parameters which can be of great help in identifying samples of genuine drugs. Using these standards, the plant can be authenticated, identified and differentiated from other related species. Also these parameters help in the detection of adulteration in commercial samples.

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Table 1 - Percentage of extractive values

S.No	Solvent	*I.frutescens*	
		Wild	**Commercial**
1.	Hexane	1.2%	1.8%
2.	Chloroform	1.2%	2.6%
3.	Water	15% 9.4%	

Table 2 - Colour and Consistency of the extract

S.No	Solvent	*I.frutescens*	
		Wild	**Commercial**
1.	Hexane	Creamy yellow sticky	Yellow sticky
2.	Chloroform	Light brown sticky	Dust brown sticky
3.	Water	Dark brown sticky	Dark brown sticky

Table 3 - Behaviour of root powder with different chemical reagents

S.No	Treatment	*I. frutescens*	
		Wild	**Commercial**
1.	Powder as such	Creamy brown	Chocolate brown
2.	P +dilute Picric acid	Pale yellow	Yellowish light brown
3.	P +conc. HNO_3	Pale reddish brown	Dark reddish brown
4.	P + conc. HCl	Light brown	Dark brown
5.	P + Acetic acid (glacial)	Creamy brown	Chocolate brown
6.	P + NaOH (aqueous)	Yellowish brown	Dark brown
7.	P + $FeCl_3$ (5%)	Blackish green	Blackish green
8.	P + Iodine (5%)	Blackish green	Blackish green
9.	P + conc.H_2SO_4	Blackish red	Black

P = Root powder

Table – 4 Fluorescence characters of *I. frutescens*

S.No	Treatment	Wild		Commercial	
		Visible light	UV light	Visible light	UV light
1.	Powder as such	Cream	Light green	Dirty brown	Green
2.	P +1N NaoH in water	Pale yellow	Pale blackish green	Chocolate brown	Blackish green
3.	P +1N. NaoH in alcohol	Creamy brown	Fluorescent green	Chocolate brown	Dark green
4.	P + 1N HCl	Cream	Fluorescent green	Light brown	Dark green
5.	P + 50% $HN0_3$	Light reddish brown	Light green	Dark reddish brown	Dark green
6.	P + H_2 So_4	Creamy brown	Pale parrot green	Dirty brown	Pale parrot green

P= Root powder

Table 5 -Qualitative analysis of the phytochemicals of *I.frutescens*

S.No	Test	Chloroform extract
1.	Alkaloids	
	Mayer's reagent	+
	Wagner's reagent	+
2.	Tannins	-
3.	Flavonoids	+
4.	Steroids	-
5.	Terpenoids	+
6.	Glycosides	+
7.	Aminoacids and proteins	-

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