



Research Article

A CRITICAL PHYTOCHEMICAL ANALYSIS OF DIFFERENT SOURCES OF SARIVA FROM ITS NATURAL HABITAT

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KEYWORDS: *Sariva*, *Hemidesmus Indicus*, *Ichnocarpus Frutescens*, *Cryptolepis Buchnani*, *Decalepis Hamiltonii*, Phytochemical analysis.

ABSTRACT

The material medica has over 25000 plant species having therapeutic value, and more than 500 are used in indigenous systems of medicine. *Sariva* is one such drug having multifaceted activities widely used as coolant, blood purifier. In Ayurvedic classics, two varieties have been mentioned, *Shweta* and *Krishna*. Regarding the botanical identity of both the varieties, *Shweta Sariva* is unanimously accepted as *Hemidesmus indicus*, where as for *Krishna Sariva* is accepted as both *Ichnocarpus frutescens* and *Cryptolepis buchnani*. In the market, *Decalepis hamiltonii* is usually sold by the name of *Sariva*. Hence all the four sources were collected from their natural habitat, subjected for phytochemical analysis, including its morphological features and HPTLC was carried out. In this research work it was found that the four sources of *Sariva* have match with standards mentioned in quality standards of Indian medicinal plants, published by ICMR, New Delhi. Further these sources should be subjected for pharmacological evaluations pertaining *Sariva* as to confirm the genuine source and best substitute.

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INTRODUCTION

The Indian material Medica contains over 2500 plant species having therapeutic value and more than 500 are used in indigenous systems of medicine. The botanical identity of crude drugs used in traditional medicine has not remained same due to lapse of time much confusion has been created in the correct identity of medicinal plants.

In olden days, a *Vaidya* was a self contained medical unit in himself, he used to collect own medicine from nearby forest and prepare his own formulation. During past few centuries and so, change in socio-economic conditions, urbanization, the contact with nature was gradually cut off and consequently the knowledge about identification of plants also deteriorated to great extent. This made *Vaidya* to be dependent on herb collectors for supply of crude drugs and these collectors worsened the condition by adulteration, sophistication or

substitution of genuine drugs with quite unrelated plant materials.

All these factors have made the identity of many drugs controversial. Therefore the need of the hour is to study the drugs with pharmacognostical and phytochemical parameters. In this research paper the pharmacognostical and phytochemical analysis of *Sariva* is being discussed. In the literature pertaining to the drug, four species or different botanically identified plants have been equated with *Sariva*, they are, *Hemidesmus indicus*, *Cryptolepis buchnani*, *Decalepis hamiltonii* and *Ichnocarpus frutescens*. All the four botanically identified species were collected and subjected for the morphological, physical and phytochemical analysis.

MATERIALS AND METHODS**Materials**

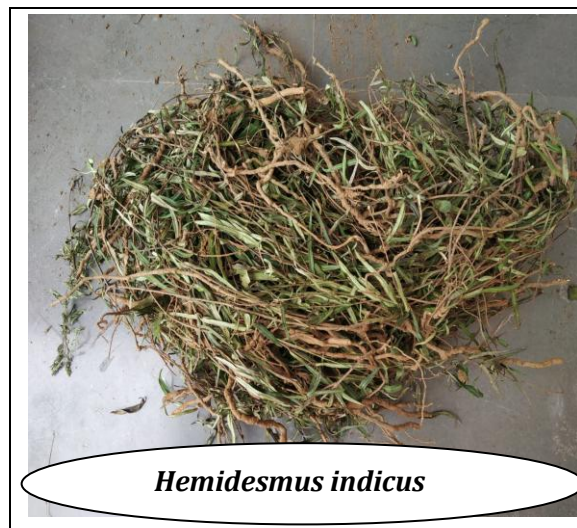
The four sources of *Sariva* were collected from, Bakkal Botanical Garden, Sirsi of Uttara kannada district in Karnataka. Collected around 1kg of each of species in fresh state.

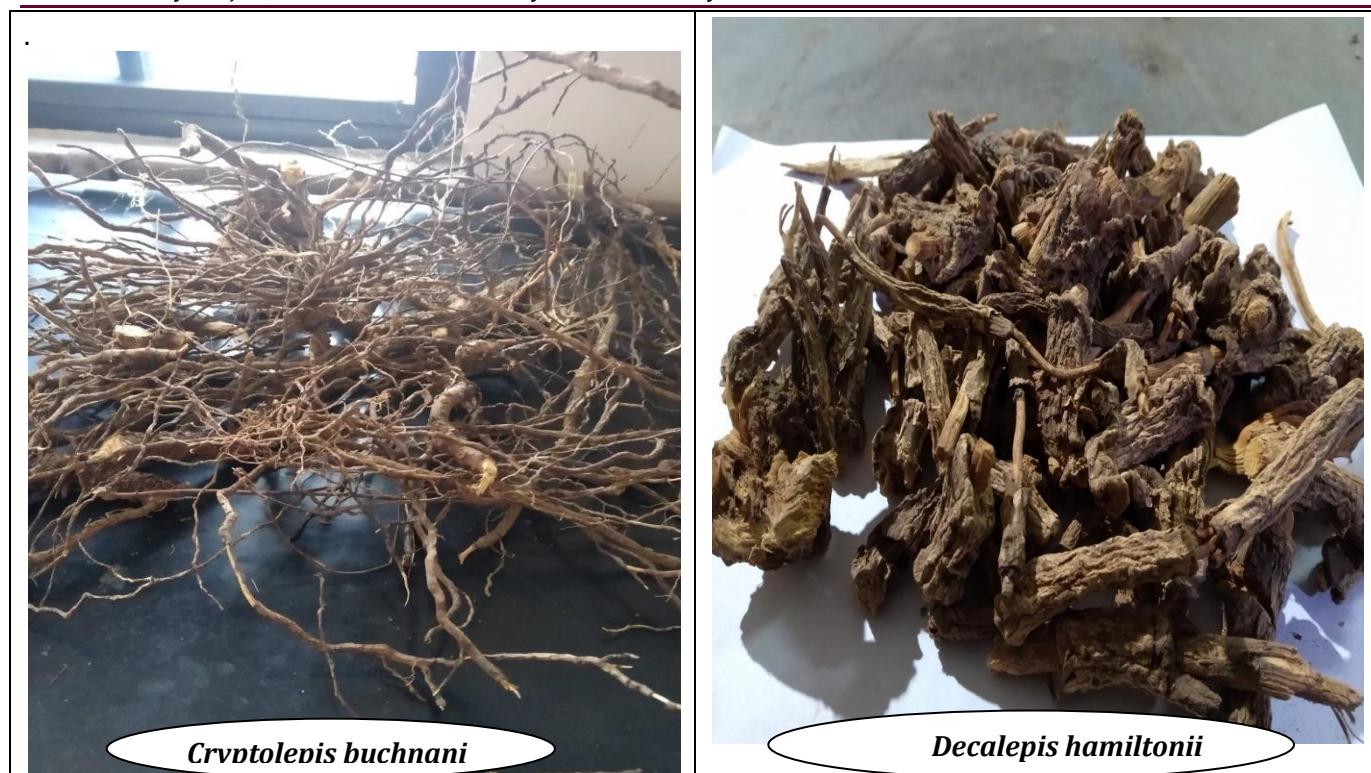
METHODOLOGY**Pharmacognostic Evaluation**

The samples were subjected to pharmacognostic evaluation by observation with naked eyes, by tactile and other sensory inspection. A magnifying lens with a dissecting microscope was used for a better evaluation of surface characters.

OBSERVATIONS

	<i>Hemidesmus indicus</i>	<i>Ichnocarpus frutescens</i>	<i>Cryptolepis buchmani</i>	<i>Decalepis hamiltonii</i>
Shape	Cylindrical	Cylindrical	Slender, cylindrical	Cylindrical, Stout
Size	Variable in size 20-30 cm in length, less than 1cm diameter	Considerably long, 1-2 cm in diameter	Vary in length, 1- 1.5 cm in thickness	Variable in size 20 – 30cm in length, 1-2cm in diameter
External color	Dark Brown	Dark or dusty brown in color	Dark brown or blackish	Brownish
Internal color	Pale yellow	Creamy white	White	Pale yellow
External surface	Marked with transverse cracks and longitudinal fissures and bark was very thin easily detachable from the hard central core	Fine longitudinal wrinkles on the surface.	Rough due to longitudinal ridges and wrinkles, remnants of rootlets and few lenticels.	Smooth when fresh, wrinkled and longitudinally ridged on drying. Transverse surface shows thin cork and hard white wood
Fracture	Short at the periphery and fibrous at the centre	Hard and fibrous	Short and fibrous	Short and splintery
Texture	Hard	Hard		Hard
Odour	Characteristic pleasant smell	No any characteristic odor	No any characteristic odor	Strong characteristic pleasant smell
Taste	Sweetish	Sweetish and astringent	Sweet and astringent	Sweetish

Botanical Sources of *Sariva*



Physical Evaluation

The physical evaluation is done by Moisture value, total ash, acid insoluble ash, water insoluble ash, extractive values. The standard methods for all these parameters were followed.

Phytochemical Analysis

The phytochemical analysis was carried out on aqueous and alcoholic extracts, HPTLC was performed to identify and quantify the active principles by following the standard procedures.

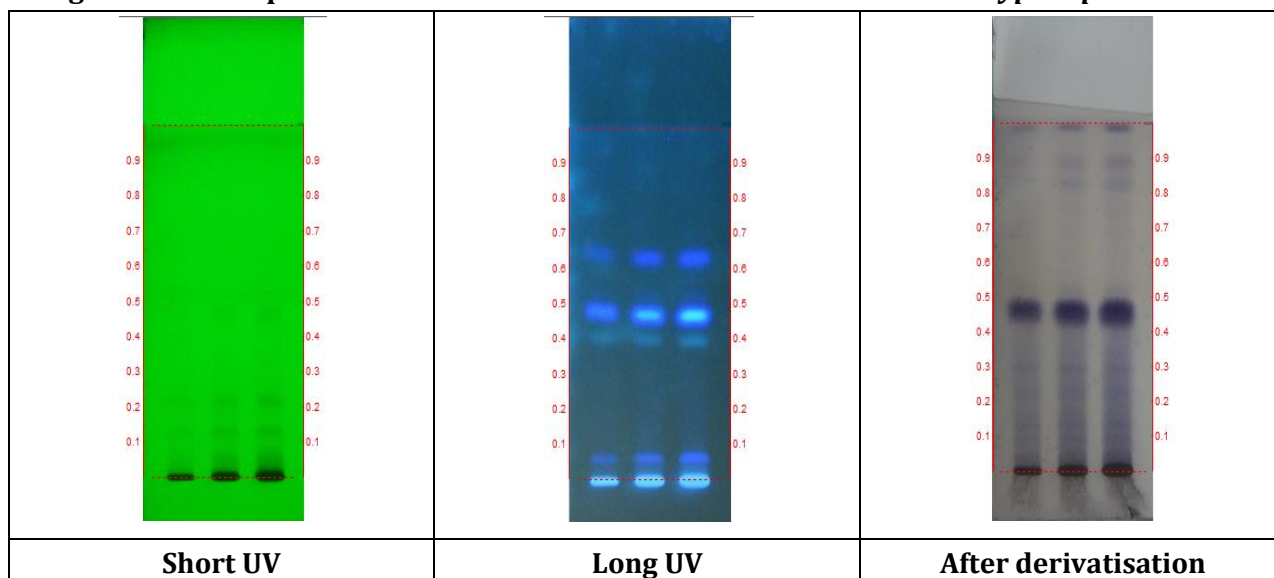
OBSERVATIONS AND RESULTS

Physical Evaluation

Parameter	Results n = 3 %w/w			
	<i>Cryptolepis Buchnani</i>	<i>Ichnocarpus Frutescens</i>	<i>Decalepis Hemiltonii</i>	<i>Hemidesmus Indicus</i>
Loss on drying (Avg± SEM)	8.74±0.01	8.54±0.02	11.77±0.01	9.26±0.01
Total Ash (Avg± SEM)	2.36±0.29	3.66±0.84	5.45±0.43	4.72±0.32
Acid Insoluble Ash (Avg± SEM)	0.18±0.00	0.24±0.01	0.63±0.01	1.26±0.01
Water soluble Ash (Avg± SEM)	0.83±0.01	0.90±0.01	2.03±0.01	0.99±0.00
Alcohol soluble extractive value (Avg± SEM)	4.59±0.01	7.26±0.01	6.31±0.00	4.22±0.01
Water soluble extractive value (Avg± SEM)	6.44±0.01	5.67±0.01	21.43±0.01	8.96±0.00

HPTLC Results

Figure 1: HPTLC photo documentation of Alcoholic fraction of root of *Cryptolepis buchnani*



Solvent system - Toluene: Ethyl Acetate (9.3: 0.7)

Track 1 – Root of *Cryptolepis buchnani*- 3µl

Track 2 – Root of *Cryptolepis buchnani*- 6µl

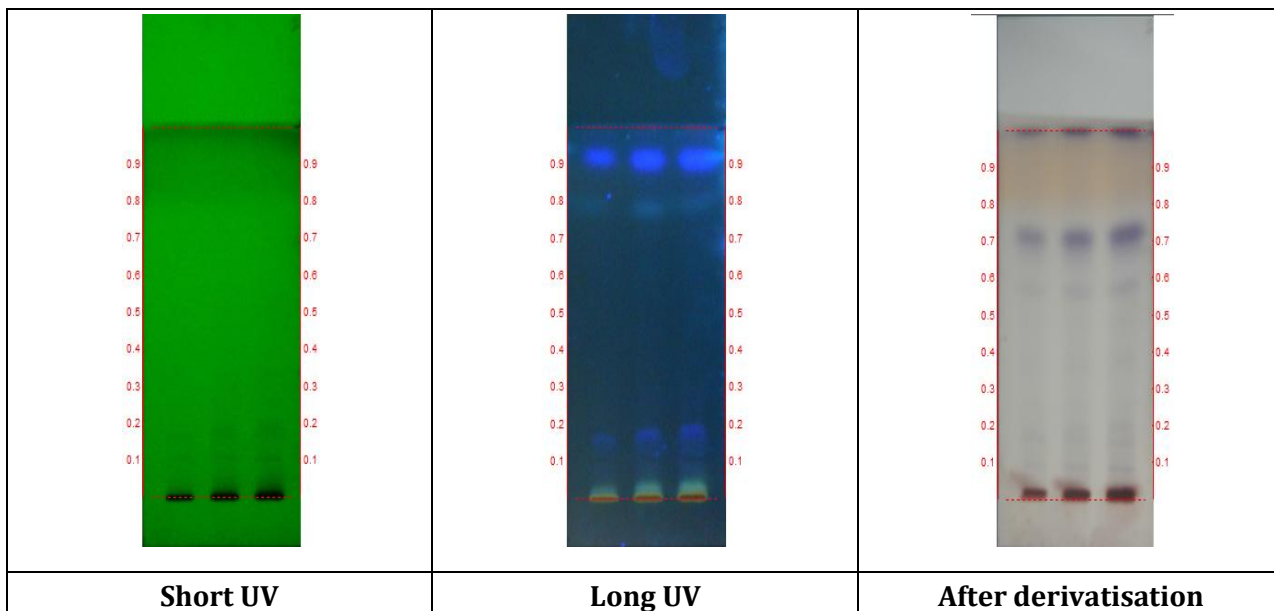
Track 3 – Root of *Cryptolepis buchnani*- 9µl

Table 2: R_f values of root of *Cryptolepis buchnani*

Short UV	Long UV	After derivatisation
0.05 (Green)	0.05 (F. blue)	0.05 (L. purple)
-	-	0.09 (L. purple)
0.14 (Green)	-	0.14 (L. purple)
0.22 (Green)	-	0.22 (L. purple)
-	-	0.30 (L. purple)
-	-	0.35 (L. purple)
-	0.39 (F. blue)	-
0.47 (L. green)	0.47 (F. blue)	0.47 (D. purple)
0.52 (L. green)	-	-
-	0.63 (F. blue)	-
-	-	0.83 (L. purple)
-	-	0.89 (L. purple)

***D - dark; L - light; F - fluorescent**

Figure 2: HPTLC photo documentation of Alcoholic fraction of root of *Ichnocarpus frutescens*



Solvent system - Toluene: Methanol (9.0: 1.0)

Track 1 – Root of *Ichnocarpus frutescens* – 3µl

Track 2 – Root of *Ichnocarpus frutescens* – 6µl

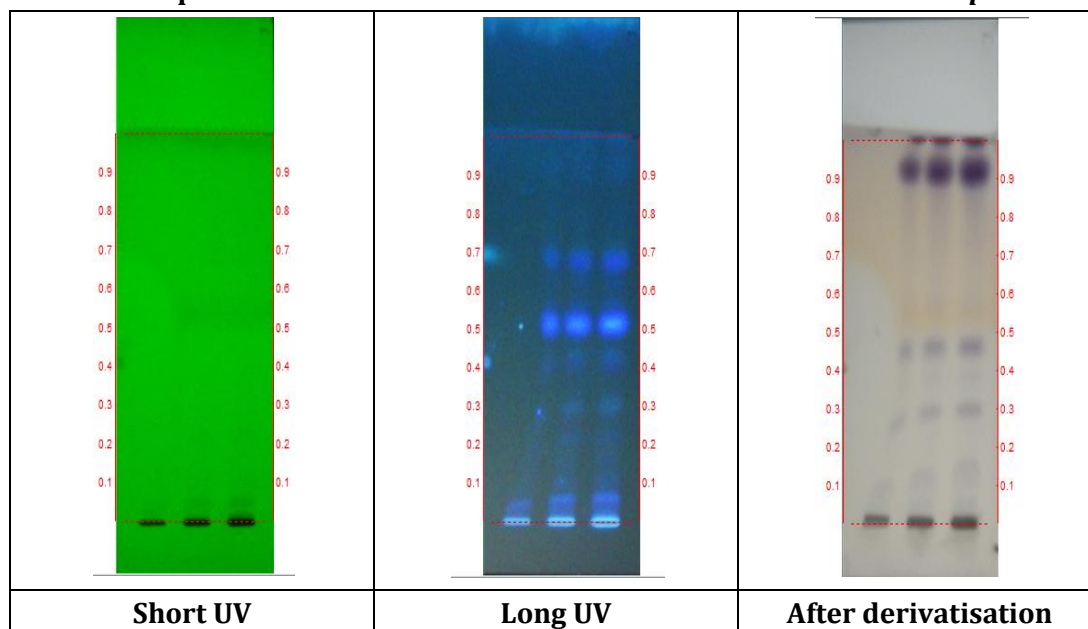
Track 3 – Root of *Ichnocarpus frutescens* – 9µl

Table 3: R_f values of root of *Ichnocarpus frutescens*

Short UV	Long UV	After derivatisation
-	0.08 (F. blue)	0.08 (Purple)
0.12 (Green)	0.12 (F. blue)	-
-	0.16 (FD. blue)	0.16 (Purple)
0.18 (Green)	-	-
-	-	0.20 (Purple)
-	-	0.26 (Purple)
-	-	0.38 (Purple)
-	-	0.49 (Purple)
-	-	0.56 (D. purple)
-	-	0.71 (D. purple)
-	0.78 (F. blue)	-
-	0.92 (F. blue)	-

***D - dark; L - light; F - fluorescent**

Figure 3: HPTLC photo documentation of Alcoholic fraction of root of *Decalepsis hemiltonii*



Solvent system - Toluene: Ethyl Acetate (9.0: 1.0)

Track 1 – Root of *Decalepsis hemiltonii*- 3µl

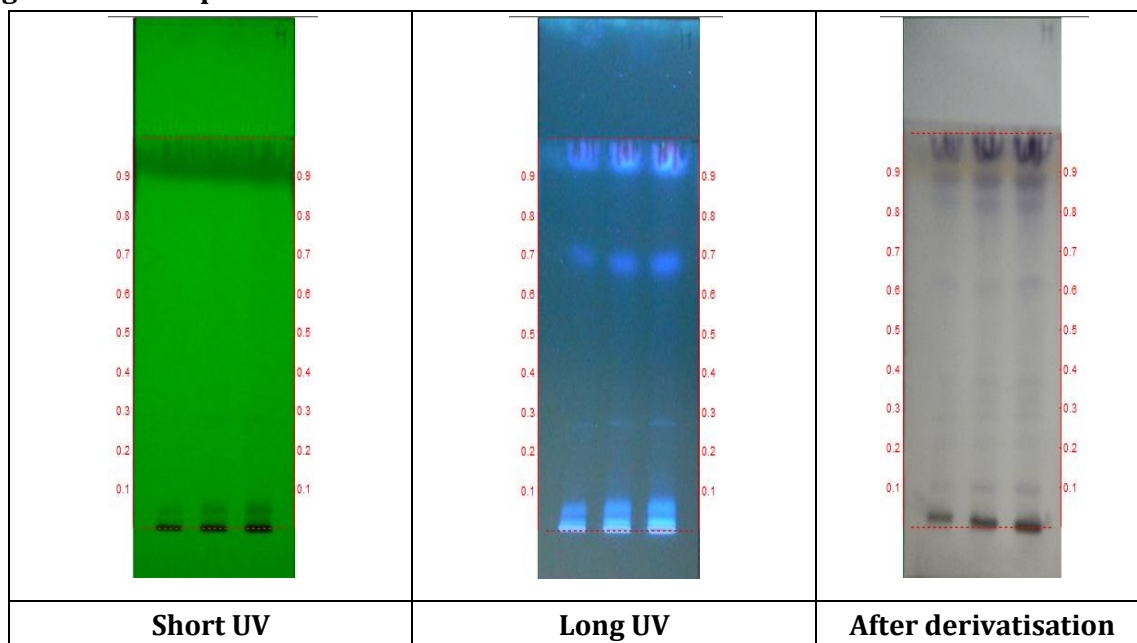
Track 2 – Root of *Decalepsis hemiltonii*- 6µl

Track 3 – Root of *Decalepsis hemiltonii*- 9µl

Table 4: R_f values of root of *Decalepsis hemiltonii*

Short UV	Long UV	After derivatisation
0.05 (L. green)	0.06 (F. blue)	-
-	-	0.13 (Purple)
-	0.23 (F. blue)	-
-	-	0.29 (Purple)
-	0.31 (F. blue)	-
-	-	0.38 (Purple)
-	0.43 (F. blue)	-
-	-	0.47 (Purple)
-	0.52 (F. blue)	-
-	0.69 (F. blue)	-
-	-	0.92 (Purple)

***D – dark; L – light; F – fluorescent**

Figure 4: HPTLC photo documentation of Alcoholic fraction of Root of *Hemidesmus indicus*

Solvent system - Chloroform: Methanol: Ethyl Acetate (13.0: 1.0: 2.0)

Track 1 – Root of *Hemidesmus indicus* – 3 μ l

Track 2 – Root of *Hemidesmus indicus* – 6 μ l

Track 3 – Root of *Hemidesmus indicus* – 9 μ l

Table 5: R_f values of root of *Hemidesmus indicus*

Short UV	Long UV	After derivatisation
0.05 (L. green)	0.05 (F. blue)	-
-	-	0.10 (L. purple)
-	-	0.22 (L. purple)
0.28 (L. green)	0.28 (F. blue)	0.28 (L. purple)
-	-	0.33 (L. purple)
-	-	0.37 (L. purple)
-	-	0.61 (D. purple)
-	0.68 (F. blue)	-
-	-	0.82 (D. purple)
-	-	0.88 (D. purple)

***D – dark; L – light; F – fluorescent**

DISCUSSION

The natural habitat of all four sources of *Sariva* is western Ghats, in and around the Sirsi we found *Hemidesmus indicus*, *Ichnocarpus frutescens*, *Cryptolepis buchmani* and *Decalepis hamiltonii* are

widely grown. For confirmation of identification of the plants textual morphological features^[1,2,3] are taken as reference, and consulted local people present there.

Physical Evaluation

The result of physical evaluation values of all the samples on parameters loss on drying, total ash, acid insoluble ash, water soluble ash, alcohol soluble extract and water soluble extract values matches with the standards present in Quality Standards of Indian Medicinal Plants published by Indian Council of Medicinal Research, New Delhi.

HPTLC Studies

In HPTLC study of all the four samples at various wave lengths bands are seen. In *Hemidesmus indicus* sample the numbers of bands were 8, in *Cryptolepis buchmani* 9 bands were observed, in *Ichnocarpus frutescens* 8 bands and in *Decalepis hamiltonii* 5 bands were observed.

CONCLUSION

In Ayurvedic classics there is a mention of two varieties of *Sariva* i.e., *Shweta* and *Krushna*. In modern pharmacopeia and Ayurvedic pharmacopeia of India, *Hemidesmus indicus*, *Ichnocarpus frutescens*, *Cryptolepis buchmani* are equated to *Sariva* and another plant *Decalepis hamiltonii* is also sold in the name of *Sariva* in the market. Hence in this study the four botanical sources were screened for morphological features, physical evaluation and

HPTLC studies. And the observations and results matches with the standards mentioned in quality standards of Indian medicinal plants. Further these sources should be subjected for pharmacological activities pertaining to the drug *Sariva*, to confirm the genuine source and also to know the best substitute.

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