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Review Article

Review on Adulteration of Ayurvedic raw drugs

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ABSTRACT

Background: *The genuiness, purity, and quality of the drugs have direct impact on the medicinal preparation. Now days most of the drugs got from raw materials were adulterated. Destructive harvesting, deforestation, lack of adequate cultivation, high price and demand, in contrast to the smaller population size of the plant, have motivated adulteration. Deliberate adulteration rather than by mistake is a serious offense and is the most important reason for adverse drug effects these days. This paper intends to disclose three of such adulteration on market samples (trivrith, sariba, tila taila) by reviewing dissertation works done at Govt ayurveda college Thiruvanthapuram, Dravyaguna dept viz.*

Methodology: *Review of Physico chemical evaluation of the samples and comparing it with API standards of the drug.*

Result: *From the review it is revealed that other species of periplocaceae used instead of Hemidesmus indicus, trivrith shoot is used instead of root, mineral oil present in thila taila.*

Discussion: *From the above results, it is evident that these drugs were not in compliance with their phytochemical standards. Either deliberately or accidently drugs were adulterated. This can cause mild to severe consequences even in its judicial administration with respect to dose etc. Illiberal rules and their mandatory executions are needed to get rid of these disagreeable acts. Without those, all the efforts to globalize this science of living will be pointless. The genuiness, purity, and quality of the drugs have direct impact on the medicinal preparation. Now days most of the drugs got from raw materials were adulterated. Destructive harvesting, deforestation, lack of adequate cultivation, high price and demand, in contrast to the smaller population size of the plant, have motivated adulteration. Deliberate adulteration rather than by mistake is a serious offense and is the most important reason for adverse drug effects these days.*

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INTRODUCTION

This paper intends to disclose three of such adulteration on market samples by reviewing dissertation works done at Govt ayurveda college Thiruvanthapuram, Dravyaguna dept viz.

1. Genuiness of Trivrith (*Operculina turpethum*(linn)silva manso) procured from Kerala market
2. Genuiness of sariva (*Hemidesmus indicus* (L) R.BR) procured from Kerala market.
3. Physico chemical evaluation for assessing the genuinity of gingelly oil (*tila taila*) in Kerala market.

METHODS

S Physico chemical evaluation of the samples and comparing it with API standards of the drug

RESULTS

1. Genuiness of Trivrith (*Operculina turpethum* (linn) silva manso) procured from Kerala market

The market samples collected from the 14 district of Kerala. From each district two market samples are collected one from city region one from village region.

API value of Root of Operculina turpethum

Total ash: not >10 Acid insoluble ash: not >1.5.

The difference from API values is given below.

Table 1: Physicochemical values

Sample	Total ash	Acid insoluble ash
Trivandrum B	10.8	
Kollam A	11.2	
Kollam B	10.6	

Pathanamthitta A	11.4	2
Patthanamthitta B	12.4	1.9
Alapuzha B	11.3	1.7
Kottayam A	10.9	
Kottayam B	12.4	
Idukki A	11.4	
Idukki B	12.2	
Ernakulum A	12.1	
Thrissur A	12.6	1.9
Thrissur B	10.2	2
Palakkadu A	10.4	1.8
Palakkadu B	11.6	1.6
Malappuram A		1.9
Malappuram B	11.6	1.6
Kozhikode A	10.5	1.6
Kozhikode B	10.6	2.3
Waynadu A	10.6	2
WaynaduB	11.2	1.9
Kannur A	10.4	2.2
Kannur B	11.4	2
Kasargodu A		1.9

Table 2: Classification of market samples of trivrit based on microscopic characters

Samples containing only root	Sample containing only stem	Sample with mix of root and stem pieces
Thiruvanthapuram B Kottayam B	Thiruvanthapuram A Kollam B Pattanamthitta A and B Alapuzha A and B Trissur A and B Ernakulum A Palakkadu B Malappuram A Kannur A and B Kozhikode A and B Idukki B WaynaduB	Kollam A Kottayam A Idukki A Palakkadu A Waynadu A Ernakulum B Malappuram B Kasargodu Aand B

As per API root is the useful part. Above study suggest its adulteration with other structures like stem.

1. Genuiness of sariba (*Hemidesmus indicus*)procured from Kerala market

The market samples collected from the 14 district of Kerala. From each district two market samples are collected one from city region one from village region.

API value of *Hemidesmus indicus*

Total ash: not more than 4%

Acid insoluble ash: not more than 0.5%

Table 3: Physicochemical values

Sample name	Total ash	Acid insoluble ash
Trivandrum a	4.5	0.7
Trivandrum b	5	1
Kollam a	8.6	2.2
Kollam b	9.2	1.8
Pathanamthitta a	7.6	1.8
Pathanamthitta b	9.4	2.4
Alapuzha a	10.5	3.2
Alapuzha b	13	5.6
Kottayam a	8.2	2
Kottayam b	5.5	1.2
Idukki a	6.4	1.8
Idukki b	12.7	3.4
Ernakulum a	10.5	4
Ernakulum b	8.6	2.8
Thrissur a	9.5	2
Thrissur b	11.2	4
Palakkadu a	7.8	1.3
Palakkadu b	9.2	2.8
Malappuram a	10.4	3
Malappuram b	8.7	1.8
Kozhikode a	11.7	2.2
Kozhikode b	6.8	1.4
Waynadu a	14	6.5
Waynadu b	12.2	4.6
Kannura	9.5	1.5
Kannur b	12.8	2.7
Kasargodu a	11.9	2.1
Kasargodu b	8.2	1.3

Phytochemical values of Total ash and acid insoluble ash is not in par with the API standards. Rather it is twice to thrice more than what is required.

1. Physico chemical evaluation for assessing the genuinity of gingelly oil (*tila taila*) in Kerala market.

25 branches were identified from 14 district 10 brands selected for randomly. From each brand 3 samples were collected for the study. The physic chemical evaluation and presence of mineral oil test, cotton seed oil test done in this study.

API value of gingelly oil

Acid value : <2

Table 4: Acid value of different brands

BRAND	Acid value
A1	5.98
A2	6.07
A3	5.77
B2	2.24
B3	2.12
C1	6.29
C2	6.61
C3	6.2
D1	6.27
D3	6.77
E1	7.15
E2	6.41
E3	6.23
F1	3.26
F2	3.06
F3	3.2
G1	7.61
G2	7.03
G3	7.75

Detection of mineral oil (holde's test)

The occurrence of turbidity during the test indicates the presence of mineral oil, the test was positive in brand G

- Result shown increased acid value and is suggestive of decreased edibility.

DISCUSSION

From the above results, it is evident that these drugs were not in compliance with their phytochemical standards. Either deliberately or accidently drugs were adulterated. This can cause mild to severe consequences even in its judicial administration with respect to dose etc. illiberal rules and their mandatory executions are needed to get rid of these disagreeable acts. Without those, all the efforts to globalize this science of living will be pointless.