B.M.E.B.R. Vol. IX, No. 1-2, pp. 40-57

Contribution to the Botanical Identity of Ayurvedic Drug *Tinduka* with Special Reference to *Vistainduka*

Gyanendra Pandey*

Received on 27th June, 1980

The study of Ayurvedic drug Tinduka with special reference to Visatinduka was undertaken. The detailed review of literature and field data has been made. Mainly Diospyrus melanoxylon and D. pergerina have been confirmed as a common botanical source for Tinduka.

Introduction

Earlier the author dealt with a little known Ayurvedic drug Visnukanda and made contribution towards its botanical source (Pandey, 1977) and another drug involved in disputes was contributivel studied with special reference to Himachal Pradesh flora in an other communication on Kandira Vaidya, 1975). In the series of studies on Ayurvedic drugs on their vital aspect of botanical identification (covering mainly controversial, unspecified and allied group of drugs requiring investigation), a familiar and common Ayurvedic drug Tinduka and its allied drugs including Visatinduka has been undertaken for study under the present pilot project.

Though the drug Tinduka generally appears to be a well known drug with no specific problem, but preliminary examination in the project indicates a need to scrutinize, review and clarify the various factors involved in the light of classical data and floristics as well as traditional information in order to determine the plants sources and check the doubtful elements besides the botanical aspect of the drug by making a contribution to the present knowledge about the drug and its utility. No earlier work on the present lines could be available in published literature consulted so far.

Classical Sketch :

The drug under classical name Tinduka has an origin and mention in the early compendia of Indian Medicine (brhattrayi) viz. Caraka (Sutra. 4-43, 25-39, 27-144 ; Vimana. 8-151 ; Sarira. 8-58, 59, 76 ; Kalpa. 1-7), Susruta (Su. 12-26, 38-48, 42-18, 46 163 ; Sa. 10-5 ; Ci. 2-84, 11-8, 21-6 : Uttara. 21-46, 31-5,

*Research Officer, (Avurveda), R.R.C., Jogindra Nagar (H.P.)
Presently at Amalgamated unit (C.C.R.A.S.) Ranikhet (Tarikhet), (U.P.)

40-41) and Vagbhata (Ci. 12-12, 14-117, Utt. 32-22, 34-10 etc.) which also includes Tinduki. A concept of variety and formation of synonymy in proper begins with the period of Nighantu works developing the knowledge of the drug on both aspects i.e. nomenclature and therapeutical indications as depicted in different Nighantu treatises. It also appears from the textual mentions and versions that certain doubts or instances of lack of conformity on identity of the drug or its varieties, confusing use of synonymy, multi-explanations of classical terms, interrelated drugs and plural drugs sources prevail.

Observations

Synonymy :

In general, the Nighantu works (e.g. Bhavaprakasa. Amradi. 65, Dhanvantari. Amradi. 40-41, Raja. Amradi. 51-52 and others) coin certain terms in synonymy of the drug viz. Sphurjaka. Ramana, Asitakaraka, Nilasara, Atimuktaka, Syndanahva, Kalaskandha. The classical nomenclature of the drug as depicted in Samhita texts only mations a few terms such as Kalaskandha, Sphurjaka and Virala, and notably an associated drug-name Tinduki indicates a specific variety form of the principal drug Tinduka. Later works on materia medica proper (Nighantu) furnishmore data. For instance, Narahari hass pecified two kinds of drug—Tindukaand Kakatinduka (Ibid. 12-77), but Bhavamisra incorporates only Tinduka (Ibid. 64-65). It appears from the trend of textual descriptions that during the period from Narahari to Bhavamisra, the concept of varieties also shows further development particulary by Madanapala who mentions Visatinduka (Madanapala Nighantu, Phaladi. 40) as another variety without any synonyms to this kind of the drug. A comparative examination of Samhitas and Nighantus' nomenclatural terminology also primarily finds that the two classical terms belonging to Samhita-sources i.e., Sphurjaka and Kalaskandha had later adoption in Nighantu work/ while another Samhita-based term Virala remained uncombined.

Associated Drug and Terms :

The ambiguity in regard to acceptable explanation on nomenclature is observed to a little extent in classical texts. For instance, the term Tinduki is of distinguishing use made by expounders of Samhitas as the same could not get due prominence subsequently. It is not certain whether the term in question indicates some variety or any speciality of the main drug. Another factor in this context relates to a group of three terms i.e. Kalaskandha, Virala and Sphurjaka attract a question as they do not mean a drug clearly. For example, the term Kalaskandha applied by Susruta (Su. 38-12) in Salasaradi gana where it means more than single drug e.g. Vitakhadira, Tinduka bheda or Tamala. Likewise classical commentators (Tikakara) tend to interpret it in the way which collectively invited criticism. The term Sphurja or

Sphurjaka commonly used by Caraka and Susruta (Vi. 8-151, U. 39-184 and Ci. 5-18) are also given various explanations e.g. Dalhana, commentator on Susruta, identifies it with another drug Phanijjaka or something like in appearance while others suggest it to be a synonym of Tinduka of its some variety. Another term Virala (which had further discontinuation in Nighantus) used by Vagbhata is considerd synonymous to Tinduka.

As a main associated drug-name Kupilu desrves casual attention in present context. Though its botanical source (*Strychnos nuxvomica* Linn.) as generally recommended with confirmity and the drug is quite known in practice, but the classical synonymy of the drug (Kupilu or Kucala) is liable to create certain confusion particularly in the light of similar aspect of the drug Tinduka or its ally Visatinduka. Sanskrit terminology is observed to comprise a few terms those are worth referring. Tinduka, Kakatinduka, Visatindu and Markatatinduka. *Faja Nighantu* mentions this drug as Karaskara of which one of the synonyms i.e. Visatindu appears to be little confusing.

In general it has also been observed that various terms are common to other drugs, and thus they may cause uncertainty to different extents. For instance, the term Atimuktaka (Susruta Su. 85-120) has been identified by Dalhana with Madhavi (of which botanical source is claimed *Hiptage benghalensis* Kurz.), but the same is interpreted as Tinduka in another context (Ibid, Ci. 31-5). Likewise a term Visatindu (and also Markatatinduka) may indicate inter-relationship with Tinduka say it either a variety or an individual drug possessing any kind of similarity. In case the term Markatatinduka is to be considered pertaining to Tinduka and another drug-name with another variety of the drug, these two terms in question may not have full justification in application for the drug Kupilu (*Strychnos* sp.).

Current Botanical Sources :

The chief drug under study Tinduka has been incorporated in various works e.g. dealing with indigenous drugs or Dravyaguna Vigyana, and the botanical source is also indicated like many other drugs of Ayurveda ; but the literary sources (Sharma, P.V., II, 182 ; Chunekar, K.C. and Pandey, G.S., 567 ; Singh, B. *et al*, 182) recommend more than single plant or the plants sources prescribed by them do not have uniformity. Generally indicated botanical sources are : *Diospyrus embryopteris*, *D. tomentosa*, *D. melanoxylon* etc. which are different species of a single genus *Diospyrus* belonging to the family Ebenaceae. Such plants are frequently suggested and reported to be in traditional practice or use more or less in different parts of country for the drug Tinduka which is known (source plants) by different vernacular names in various regions (such as Kendu, Tendu, Tend etc.). This state of

usage for botanical sources of the drug Tinduka may invite attention for review.

Floristic Survey :

During forests explorations and plants survey in different States, the author met with certain species/plants reported to be known as Tinduka or its kinds possessing medicinal and other utility ; and the field data/information about the plant(s) and their usefulness gathered from time to time form a practicable base for further taking observations relevant to the present problem. In view of suitable ecological conditions and availability of data, the exploratory series performed in Madhya Pradesh are given priority.

Herbarium specimens examined :

Diospyros melanoxylon Roxb. : G. Pandey, 378, 875, 1089, 1167, 1290, 2290, 3218, Harsi, Nirpatpura, Rhenti, Amkho-Mohna, Dandakhidak, Harsi, Beharkho ; A.C. Dey & G. Pandey, 1262, 1266, 1342, Dhursendi, Bhimbarha, Fatidant.

Diospyros cordifolia Roxb. : V.K. Singh & G. Pandey, 1901, Compartments 1-2, Barahi, Bhind.

Diospyros montana Roxb. : V.K. Singh & G. Pandey, 1549, Barahi, Bhind ; (also L.S. Bhatnagar, 30-11-70, Lucknow, U.P.).

Diospyros peregrina (Gaertn.) Gurke. : G. Pandey, November' 75. Gurukul Kangri University Campus, Hardwar, (U.P.).

Most of the plants specimens taken into account belong to the different areas under five forest ranges of Gwalior Forest Division (M.P. where some of the species are also recorded from other adjoined forest divisions e.g. Sivpuri, Sheopur of Gwalior Forest Circle) alongwith a few from Uttar Pradesh. The plants specimens (field book numbered) are deposited in to the herbarium of Survey of Medicinal Plants Unit, Gwalior, (M.P.).

As regards the occurrence of the plants in the areas surveyed, *Diospyros melanoxylon* has varying frequency of distribution and is generally common and abundant in the forests, but *D. cordifolia* and *D. montana* are found occassionally, and another plant *D. peregrina* has almost same frequency as noted in the field. In Madhya Pradesh, some other species of *Diospyrus* have also been reported (Waheedkhan, M.A., 1971) such as *D. exoculpata* Buch.—Ham. (Syn. *D. tomentosa* Roxb.) and *D. chloroxylon* Roxb. locally called Tumari and Kalatendu respectively. Some other workers with recent publications mostly report occurrence of *D. meanoxylon* mainly from different parts of the State surveyed so far (Saxena, *et al*, 1970 ; Panigrahi, *et al*, 1965). In the Northern region, the plants of *Diospyros* are generally known as Tendu, Kendu, Tenda or are given the similar local terms, and *D. peregrina* is given Kala tendu or

Table—1

Comparative Morphological Characteristics

	D. peregrina (Gaertn.) Gurke; =*D. embryopteris* Pers., *E. peregrina* Gaertn., *D. glutinosa* Koen. ex Roxb.	*D. cordifolia* Roxb. =*D. montana* Cl. ; *D. montana* var. *cordifolia* Hiern.	*D. montana* Roxb. =*D. montana* Hiern. *D. montana* Merr.	*D. melanoxylon* Roxb. =*D. exsculpta* Buch.-Ham., *D. tupru* Buch.-Ham., *D. wightiana* Wall.
1	2	3	4	5
Habit	Medium sized or small, ever green tree with many spreading branches forming a shady crown near the ground, quite glabrous except young parts and inflorescence, Bark dark-grey or greenish-black, exfoliating in large pieces.	Large shrub or small tree with short often crooked trunk ; Trunk and large branches armed with many stout and often branching spines. Bark blackish or dark brown, furrowed with longitudinal and transverse cracks.	Medium sized or small tree, sometimes armed; trunk usually crooked covered with dark rust-coloured nearly smooth bark. Young branches softly pubescent.	Medium sized deciduous tree, bark dark grey or black, exfoliating in rectangular scales; young parts and inflorescene clothed with grey or twany tomentum.
Leaves	Young foliage reddish, Lvs. 12. 23 x 4. 6 cm., ovate-oblong to oblong, coriaceous, dis-	Lvs. ovate-oblong to ovate-lanceolate, cordate or rounded at the base, subacumi-	Lvs. ovats-oblong, sub acuminate, 2.5—4 in. long, bluntly acuminate usually rounded	Lvs. 2.5-6 x 1-2.9in., alternate or sub-opposite coriaceous, ellipitic oblong, obtuse or

Contd.....

1	2	3	4	5
	tichous, spreading, 4-11 — in-long and 1. 3-3 in. wide, lanceolate, dark-green (crimson when young), glabrous and shining, petiole. 5 in. long, wrinkled.	nate 1.5—2.5 in. long, softly downy on both surfaces esp. when young, petiole 1/8—1/4 in. long.	at the base, thinly coriaceous, margins undulate, softly pubescent when young finally glabrous on both surfaces, petioles I/6—1/5 in. long.	subacute, softly twany tomentose on both sides when young, glabrous above ande pubescent beneath when mature, bas usually acute, rarely rounded; main nerves 6-10 pairs with reticulate veins between; petioles 1/4—1/3 in, long.
Flowers	Unisexual, 4-merous, white or cream-coloured; female fls. solitary, drooping, calyx accrescent. Male fls. in peduneled cymes, fl. buds ovoid-oblong.	Male fls. pale white, in triad on axillary cynes, calyx persistent, enlarged in fts,, lobes reflexed. Female fls. solitary.	Male fls. pale yellow, in small, few-flowered panicles. Calyx of female fls. persistent, enlarged in fts reflexed, glabrous outside and inside.	Male fls. 4-6 merous, 3-12 togather in twany tomentose panicles drooping cymes longer than the peticles. Female fls. rather longer then the male, solitary, sub-sessile, 4-5 merous.
Fruits	3-5 cm. across, almost glabrous or 1—2. 5 in. diam., almost globbose	Globbose, 1.5—1 in. in diam., yellow when ripe.	Pendulous, globbose, about 2.5 cm. across, supported by the en-	Yellow when ripe, ovoid or globbose 1-1.3 in. long; fruiting

Contd.....

1	2	3	4	5
	or sub-globbose, covered with deciduous rusty-coloured scruff, yellow when ripe. Seed 4-8 embedded in glutinous pulp, compressed, smooth, reddish-brown.		larged reflxed calyx-lobes. reddish, brown.	calyx thickly coriaceous, flat, the lobes undulate, often with reflexed margins. Seeds 2-8 compressed, oblong, testa rugose, shinning ; albumen ruminate.
Certain distinguishing features	*Lvs.* glabrous *Male fls.* in threes, stamens many in two rows. *Fts.* covered with dense, rusty scruff.	*Lvs.* glabrescent, 4-6 cm. long. *Male* fls. in threes *Fts.* glabrous	*Lvs.* glabrescent, 6-10 cm. long *Male fls.* in small few flowered panicles *Fts.* glabrous	*Lvs.* often sub-opposite. *Male fls.* corolla more or less tubular *Fts.* glabbose

Table—II

Salient distinguishing features and comparative characteristics of the fruits (Phala) of different plants - sources and allied-under study

Current Ayurvedic/ Popular Name	*Diospyros montana* Roxb. Bistendu	*Strychnos nuxvomica* Linn. Visatinduka	*Salvadora persica* Linn. Pilu
1	2	3	4
Structure/general appearance	*Fruit*—globose, pendulous about 2.5 cm. across, supported by the enlarged reflexed calyx-lobes, reddish-brown	*Berry*—globose, 1-3 in. in diam., rough and shining, orange, red when ripe.	*Drupe*—globose, 1/8 in. in diam., smooth, red when ripe (yellow when ripe *S. oleoides* Done.)
Poisonousness	Poisonous	Poisonous	Non-poisonous
Taste and Edibility (human/common)	No/Non-edible, distasteful. Leaves reported to be eatable when cooked. Every part of tree (*D. cordifolia*) including	Almost every part of tree more or less poisonous, but particularly seeds. No/Non-edible.	Yes/Edible, Tasteful (esp. ripe fruits sweet e.g. (*S. oleoides*).

Contd.....

1	2	3	4
	fruits give bitter taste as well as most unpleasant smell.		
Association with animals	Piscicidal plant-leaves and fruits (crushed) employed to stupefy fishes.	Some animals and birds including crow eat berries. Leaves, if eaten by cows, act as glactogogue. Also employed e.g. fruits/seeds for toxic and fatal effects in certain animals and birds.	Tasteful for animals and birds. Camels fond of browsing the leaves.
Relevant classical/ popular terms	Bistenda, Bistendu	Visatendu, Katkapiluka Ramyaphala, Visadruma	Gurhaphala, Karabhapriya

Makrha Tendu names, while local names like Bistendu(u) and Bahktendu have been found specific terms for *D. montana* and *D. cordifolia* respectively. In Himachal Pradesh, *D. peregrina* and *D. melanoxylon*, known as Kendu or Tendu are also reported from certain particular areas like Nahan, Kunihar, Una, Nurpur and Kangra forests.

Interpreting Classical Nomenclature :

An attempt for interpretation of nomenclatural terms available in Sanskrit synonymy in the texts referred to get indications of basic importance in identification, has been made. In general it has been observed that the synonymous terms of the drug Tinduka indicate to different characteristics of the plant meant in classical framework. Certain indicators on this aspect may be pointed out such as (a) the term Asitakaraka suggests to produce (or colour) black colour, (b) Kalaskandha indicates to black colour of the stem/trunk or branches, (c) Nilasara gives indication for the blue colour of heart wood or any other internal part, (d) Ramana probably appreciates evergreen or ornamental nature (or similar natural pleasantness) of the plant, (e) Sphurjaka or Sphurja carries probably sense of refrigeration or exhilaration property (literally) as well as efficacy against ailments like Prameha etc. with metaphoric application ('Sphurja vajra nirghose' : 'Sphurja-Sphurjati'), (f) Atimuktaka term in general applies to ornamental or fragrant nature of plant(s) like Madhavi, (g) another term Syndanahva literally denotes a similarity with Syndana, a different drug. Simultaneously the principal classical name of the drug Tinduka gives literal expression to the habit at of drug plant which has suitability for occurrence in wet places (*'Timyati adrobhavati iti Tindukah'* : *Kalaskandha 'Kalaskandhosyeti'* ; *Atimukta-Atikranto muktan virktan atimuktah'* etc.).

In view of correlation between classical synonymy and source plants in current use for the drug Tinduka, an attention has been paid, and results observe that various characteristics as depicted in classical terminology applied for Tinduka in the texts kept certain factors which are resembling to varying extents with the species of *Diospyros* accounted for (e.g. *D. melanoxylon* and *D. peregrina*). This preliminary observation is also supported by various field information about habit, habitat, local utility and other factors related to the source plants recorded during this study examining the classical synonymy-based features of drug for comparative view.

As regards, the drug or variety-name Visatinduka, it has earlier been indicated that the term is mentioned in the text as solitary (e.g. Madanapala, op. cit.) which generally indicates a specific type of Tinduka with poisonousness in absence of ample synonymous terms in textual material (but for synonymy of Karaskara or Visamusti including the same term

Table—III (Schematic)

Tinduka and Allies-Origin and Development of Classical Nomenclature

I. **Tinduka-Tinduki** (CS, SS, AH)

(Also Atimuktaka, Madhavi, Tinduka-SS, AH)

|

Kalaskandha (SS)—Virala (AH)—Sphurjaka-Sphurja (CS, SS)

(All synonyms for Tinduka and Tinduki)

|

Tinduka—Kupilu (DN).....Kupilu (DN)

Tinduka—Kakatinduka (RN).....Karaskara (RN)

(Kupilu not given)

Tinduka—Visatinduka (MPN).....Visatinduka (MPN)

Tinduka—Kakatinduka (BPN).....Kupilu Or Kakatinduka (BPN)

(Karaskara not given)

Tinduka—Kupilu (AK).....(Kupilu (AK)

Tinduka—Visatinduka (KN).....Visatinduka (KN)

II. **Visamusti—Visamustika** (SS, AH).....**Karmuka** (AH)

| | |

| | (Interpreted Drugs : Dalhana also for Mahanimba other than Kupilu when others suggest Karkotika or Alambusa) | (Corresponding to nearly identical to Visamusti and Karmuka-applied for several other drugs)

Kupilu (DN)

Karaskara (RN)
Visatinduka (MPN)
Kupilu or Kakatinduka (BPN)
Kupilu (AK)
Visatinduka (KN)

Vayasapiluka (CS)

|

Kakanda-Kakandaphal-Kakansha
Kakandola (CS, SS, AH)
(Interpreted drugs : Sukarasimbi as Atmagupta, Kakatinduka, Mahanimba etc.)

|

VISATENDU OR KAKAPILU (Kucala)
(Currently popular)

Abbreviations : CS — Caraka Samhita
SS — Susruta Samhita
AH — Astanga Hrdaya
DN — Dhanwantri Nighantu
RN — Raja Nighantu
MPN — Madanapala Nighantu
BPN — Bhavaprakasa Nighantu
AK — Amarakoasa
KN — Kaideva Nighantu

Visatindu which is separate drug). Considerably rest two species of *Diospyros* given emphasis in present context have bitter taste, unpleasant smell and poisonousness as per field reports (e.g. *D. montana* and *D. cordifolia*.)

Discussions:

(1) The local name recorded in floristic survey and literary works (later dates) provide important clue particularly in respect of Visatinduka. Understandably the local term Bistend, Bistendu or likewise appears to be a modified form of Sanskrit term Visatinduka frequently referred to. Among local inhabitants of certain areas including tribals, the plant familiar under these folknames has been identified as *Diospyros montana* Roxb. The tribals are also apprised of its poisonousness and property as fish poison (e.g. leaves) and they find the fruits non-edible. There may be little confusion in regard to correct recognition of this plant in field, but it is easily distinguishable from *D. cordifolia* Roxb. by salient differential key-characters already indicated.

(2) In certain areas undertaken for survey, the allied species *D. cordifolia* Roxb., recorded and identified, is found to be interesting in this context. Its local name Bistendu as prevalent in certain parts (e.g. Madhya Pradesh) of Central India. This may also suggest the plant known-more or less-as Bhaktendu or Bistendu has worth as one of the substitutes for Bistendu or Visatinduka. Folk information gathered about this plant that every part of tree contains a bitter taste including fruit with a most unpleasant smell, also help to eliminate it from Tinduka plain.

(3) Mainly two plants familiar as Tendu or Kendu (also similar local terms) recorded in present survey are identified as *D. peregrina* (Gaertn.) Gurke. and *D. melanoxylon* Roxb. which are generally in vogue and current use-more or less-as Ayurvedic drug Tinduka in different parts of country. It also appears that extent of utility of particular plant (among two *Diospyros* species indicated depends upon the frequent availability of specific species in the particular areas alongwith other local factors unless specially therapeutically desired as Tinduka. For instance, the most common plant in many areas of Madhya Pradesh forests (producing about 65% of Tendu leaves earning about half of the country's revenue of Birhi industry), is *D. melanoxylon*, and well-familar as Tendu of which the fruits are eaten by folks and tribals and much appreciated during summers in these forests. Other species of *Diospyros* have also been reported from this province to varying occurrence. Besides the Central India and other parts, these plants (*D. melanoxylon* and *D. peregrina*) are also reported in low-height zones of Himachal Pradesh (e.g. Kangra, Una, Hamirpur etc.) locally known as Kaindu, Tendu etc., and

(4) As regards *D. peregrina* it also exhibits similarity in details depicted in classical texts (e.g. synonyms) and its fruits are also locally useful. Very handsome tree gives viscid pulp of the fruits utilised in book-binding and caulking the boats ; and fishing nets-lines are said to be rendered more durable after steeping them with astringent fruits' infusion. This plant is also recommended as botanical source for Tinduka, but the term Markata Tinduka appears to be more appropriate for *D. melanoxylon* which is also called by folks Makarhtendu. Another name Kalatendu reported from some northern parts also indicate relevance with Sanskrit name Krishna Tinduka, but no such kind of the drug could be available in texts. Practically the colour of stem is indicative to this vernacular name. Its fruits are also eaten by monkeys as per field information.

(5) Field observations on the plant *Strychnos nuxvomica* indicate that fruits are also eaten by some birds and animals, but they are also used to kill crows and other similar animals due to its poisonousness. The classical terms like Kakatinduka, Vayasatinduka indicate to definite relationship with crows, and hence such textual applications are justified, but the inclusion of the terms like Markatatinduka, in case of Visamusti, appears to be little confusing as is more apt in synonymy applied for Tinduka (*Diospyros* species) as practically monkeys would like tasty fruits of *Diospyros* trees.

In addition certain terms having analogy with crow viz. Kakanda, Kakahva, Kakasphurjaka, Kakendu, Kakapilu and Vayasapilu-incorporated in textual synonymy for Kupilu may also be referred to in this context. Another drug Pilu (*Salvadora* species) in this quoted spell of synonymy on account of certain similarity in any of the morphological characters, and both Sanskrit names for crow i.e. Kaka and Vayasa, have been coined and used in texts. Among these terms Kakanda seems to be interesting and worth-attention. Like other terms related with crow, the name Kakanda (or Kakandola Kakandaphla, Kakandaki, Kakandola : CS, Ci. 3-2-66, 23-49, 51-52, 216, Su. 27-33 ; AH, Ci. 5-20, 0.24-35, Su. 6-22) literally means the egg of crow. Though the term Kakanda and its variants are applied in texts in different contexts (also some of them annotated by commentators), but the application of Kakanda by Caraka is meant entirely as an anti-dote to poisoning and fruit it self is poisonous substance, so it is also identified with Kaka tinduka, Mahanimba or other drugs (Tikakars). As already indicated Kakatinduka is applied for both drugs i.e. Visatinduka and Kupilu (*Diospyros* and *Strychnos* respectively) which are also synonymous to Vayasapilu referred only by Caraka (Ci. 23-216). The term Kakanda and its variants (terms) used in

Samhitas carry possible explanation of resemblance to size or other similar characteristics of fruits or seeds to varying extents.

(6) An important term 'Markata' playing considerable role in coining specific nomenclature accounted for, has been found mainly with tri-usage. For instance, Nighantus incorporate Markati in the synonymy applied to three drugs : Apamarga (Bhav. Gudu. V. 219), Karanji (Ibid, V. 123) and Kapikacchu (Ibid. V. 129). It is meaningful to find close relationship with monkeys (life and behaviour) inhabiting on trees in forests (Sakhamrga, Parnamrga, Vrksamarkatika and other terms including Markata for monkeys and their kinds : Bhava, Mamsa. V. 18) where the plant-sources of these drugs grow (i.e. *Achyranthes aspera* Linn., *Caesalpinia crista* Linn. and *Mucuna pruriens* DC. respectively). Such plant-animal correlationship playing significant role in Dravyaguna, suggests to understand that the non bitter (poisonous) *Diospyros* may be more tastefully eaten by monkeys than anyone drug-plants under study ; and so the term Markatatinduka appears to be more justifiable for *Diospyros* plants.

(7) The terms 'Kupilu' frequently used for Visamusti, itself gives clear indication to any inferiority or bad quality ('Ku' also applied for several drug : ref. Nighantus) debarring from tasty or pleasant characters (smell, taste etc.) of fruits as *Strychnos* fruits keep bitter-white pulp embedding many seeds. So this term is apt for Visamusti as such coined by prefixing word 'Ku' with Pilu which is an individual drug (*Salvadora* species) giving sweet and tasty-edible-fruits and so it is assorted in Phaladi Varga by Bhavamisra's Nighantu, alongwith Visatinduka ; but the application of term Tinduka with a prefix 'Visa'-showing clear difference from Kupilu is due to certain resemblance in other respects. The ancient idea and pattern of describing plants (in textual form) also carries a practical style to exemplify some drug with help of another more popular plant or major drug, as it appears in the case of Kupilu and Visatinduka relating to Pilu and Tinduka classified in the same Varga of Nighantu (op. cit.).

On the contrary the fruits of *Strychnos nuxvomica* (Visamusti or Kupilu), though they are eaten by some animals, are harmful and fatal to certain birds or animals particularly as the plant is itself called Poison Nut Tree, and for the human being it a only utilised in medicines after a set purification (Sodhana) as a quite potent and useful drug. It is just possible that prefix of 'Kaka' (crow) in certain terms (Kakatinduka etc.) inclnded in classical synonymy has been made in the texts.

Conclusion

The present study conducts an in-depth survey of different aspects such as classical, botanical, floristic and ethno-

medical, relevant to botanical identification of Ayurvedic drug Tinduka with special reference to Visatinduka by making a co-ordinated approach to cover the salient features and the problems involved in project undertaking and for their fact-finding solutions. The detailed review of various aspects and field data has been made with an applied assessment and comparative observation. Mainly *Diospyros* species (*D. melanoxylon* and *D. peregrina*) have been confirmed as a common botanical source for Tinduka. Ethno-medically important plant *Diospyros montana* has been mainly suggested as a botanical source for the individual Ayurvedic drug-name Visatinduka which is also more recommended as it apt than its application as synonymous term for quite different drug Visamusti (*Strychnos* species). *Diospyros cordifolia* has also been examined in the present context alongwith its field reports.

Acknowledgement

The author is grateful to the Director, Central Council for Research in Ayurveda and Siddha, New Delhi for providing facilities and operating Survey of Medicinal Plants Project(s) by opening prospective avenues for medico-botanical researches.

Thanks are also due to Dr. K. Raghunathan, Deputy Director (Technical), C.C.R.A.S. Headquarters, New Delhi for his kind encouraging guidance and enthusiastic inspiration for multi-disciplinary approach to carry on plants survey and studies.

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हिंदी सारांश

विषतिन्दुक के विशेष संदर्भ में आयुर्वेदीय वनौषधि तिन्दुक के वानस्पतिक अभिज्ञान में योगदान

ज्ञानेन्द्र पाण्डेय

प्रस्तुत लेख में आयुर्वेदीय औषध तिन्दुक तथा विषतिन्दुक के विशिष्ट संदर्भ में उसके वानस्पतिक विभिन्न पहलुओं के सर्वेक्षण पर गहन अध्ययन किया गया है, जो कि शास्त्रीय, भेषज अभिज्ञानीय और प्रजातीय चिकित्सा से संबद्ध है। औषध पहचान हेतु मुख्य विषयों का समावेश तथा परियोजना में आने वाली समस्याओं के निवारण हेतु उपाय भी दिये गये हैं। विस्तृत संवीक्षा विभिन्न पहलुओं पर क्षेत्रीय आंकड़े प्रस्तुत करते हुए प्रयोगात्मक दृष्टि से तथा तुलनात्मक निरीक्षण के आधार पर की गई है। मुख्य रूप से डायोसपैरस जाति की (डिमिलैनोआक्जीलन एवं डीपैरेजेरिना) तिन्दुक का सामान्य वानस्पतिक स्रोत की पुष्टि की गयी है। प्रजातीय चिकित्सा का महत्वपूर्ण औषध पौधा डायोसपैरस मोण्टेना को मुख्य रूप से आयुर्वेदिक औषध विषतिन्दुक का वानस्पतिक स्रोत बताया गया है, जिसे भी विषमुष्टी के पर्याय के रूप में भी प्रयोग किया जाता है। डायोसपैरस कार्डीफोलिया का भी इसी संदर्भ में क्षेत्रीय सर्वेक्षण के आधार पर परीक्षण किया गया है।