

***Launaea asplenifolia* (WILD) Hook f. : BIO-CHEMICAL IMPACT ON POPULATION STABILITY IN THARU TRIBE OF INDO-NEPAL HIMALAYAN TARAI OF BIHAR**

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ABSTRACT

Launaea asplenifolia (Wild.) Hook f. is well known to the Tharu tribal community as Vatgai or Thigna and is an ethnobotanically important genetic resource since time immemorial. Leaves and seeds are being used in certain drinks. It provides stamina for a day long hard works. Four free amino acids have been detected in the plants. Out of these three aminoacids are glucogenic in nature which give immediate energy when used by the Tharu tribe but on persistent use, it causes loss of libido leading to sterility which is indirectly responsible for the less growth of tribal population to some extent.

KEYWORDS: Himalayan tarai, Tharu tribe, *Launaea asplenifolia*, Bio-chemistry

The Himalayas of Nepal in continuation with China comprising tarai region provide ample opportunity for rich biodiversity and the culture, tradition and rituals of various ethnic groups. The Himalayan tarai region falling under Indo-Nepal border, Champaran district of Bihar situated at 84^o to 86^o longitude and 26^o to 28^oN latitude is the most venerable site for the study of ethnobotany where a sizable number of Tharu tribe community reside traditionally inside or nearby dense forest far from modern society having lax habit (Anand and Srivastava, 2004).

The marriage negotiation among the Tharu normally start from the side of bride groom. Widow marriage is quite common but marrying a brother wife is taboo. There is no recognized system of divorce but usually it is brought about by girls refusal to live with the husband and she is married to another man of same clan and husband has to pay fine for being misfit for girls. These customs underline the superiority of the Tharu women. Women don't observe purdan and are more comely and energetic than male. They don't believe in using any contraceptive or family planning measures. Present day human population increasing tremendously but the Tharu tribe population is increasing very slowly. Many families found issue less and found very less birth rate.

Keeping the very slow progress of population of the Tharu community of the area in mind a question was

formulated to explore out the possible reason for the low progenital capacity. After extensive survey it appears reasonable to speculate that there are certain thing which inhibit progenital capacity of the Tharu tribe. It was also noticed that most of the issueless and people of low progenital capacity use to take locally prepared certain drinks which contain *L. asplenifolia*. With this idea the present investigation was under taken whether *L. asplenifolia* has any correlation or impact on progenital capacity of the Tharu community of this region.

MATERIALS AND METHODS

Extensive exploration trips were under taken in Indo-Nepal Himalayan tarai region especially focused to the Tharu tribal dominated Tharuhat narrow belt, covering an area of 1,49,030sq. km of border district Champaran of Bihar, India. The southern region of Nepal includes Mahabharat Shiwalik range and the corresponding Indian side includes the foot hills of Shiwalik range at the juncture of the Himalayan tarai region and Gangetic plain. For recording ethnobotanical survey data, generalized question was prepared. On the basis of extensive survey and personal interview with the tribal people of various age groups about their association with the plants, an inventory document has been recorded. Repeated inquiries on the plants application of the same of plants were also made to

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other communities of the same village and of the other village tribe to ascertain the correctness of the information. The plants were described and identified while for the amino acid detection procedure of Thomas and Sharma, (1977) were followed.

RESULTS AND DISCUSSION

The plant *L. asplenifolia* is locally known to the Tharu community as Vatgai or Thigna which has been collected from dense forest of Valmiki nagar, Gaunaha and Mainatar as these places are Tharu dominated. The rosette foliar structure which are pinnatifidly lobed. The gross appearance of the plant is very much similar to *Crepis Japanica*.

L. asplenifolia is a scapose herbaceous, annual plant of Compositae family bearing tap root. Stems are herbaceous with slightly creeping habit, cylindrical, glabrous, branched and solid. Radical leaves are simple. Alternate, sessile, extipulate with lobed or wavy margin, uncostate reticulate venation. Inflorescence is homogamous capitula means flowers are all legulate and hermaphrodite. Flowers are sessile, bracteates, zygomorphic epigynous, complete and flowering from January to May. Calyx modified into pappus. Corolla with five petals, gamopetalous. Androecium with five stamens. Syngenesious and epipetalous. Gynoecium is bicarpellary, syncarpous, ovary inferior, unilocular and placentation, style one, stigma bifid. Fruit is a cypsela.

Table 1: Detection of Amino acids in the leaves of *Launaea asplenifolia*

Sl. No. Amino acid	Index Number	Rf. Value		Spots	
		Index	Calculated	Concentration	colour
Valmiki Nagar					
1. DL- Alanine	1	0.27	0.28	++	Liliac
2. DL-Aspartic acid	4	0.36	0.36	+	Pale –rose
3. L-Glutamic acid	8	0.33	0.32	++	Lavender
4. L-Bistidine HCL	10	0.20	0.21	-	Mushroom
Gaunaha					
1. DL-Alanine	1	0.27	0.27	++	Liliac
2. DL-Aspartic acid	4	0.36	0.36	++	Pale –rose
3. L-Glutmaic acid	8	0.33	0.32	+	Lavender
4. L-Histidin HCL	10	0.20	0.20	+	Mushroom
Mainatar					
1. DL-Alanine	1	0.27	0.27	+	Liliac
2. DL-Aspartic acid	4	0.36	0.36	++	Pale –rose
3. Glutamic acid	8	0.33	0.32	++	Lavender
4. Histidine HCL	10	0.20	0.21	+	Mushroom

Concentration of the spots;

‘++’ Heavy trace , ‘+’ Moderate trace, ‘-’ Just traceable.

The leaves and seeds of the plants were mixed up with *Cannabis sativa* leaves and used as an intoxicator. It is most commonly used as stimulant after a day long hard work by the Tharu young male. Leaves and seeds were pasted with *Datura stramonium* capsule as whole for preparing strong favorite drink while the community perform Puja, Bhajan or on many other festivals. They have close association with plants for various uses and carry many information through verbal texture for generation to generation (Anand and Srivastava, 2004; Anand, 2000). They considered as pious drink as it contains no alcohol beverage as such the plant *L. asplenifolia* bears ethnobotanical significance. The external use of *L. asplenifolia* paste by KOL tribe of Vindyan region for the treatment of leucoderma have been reported (Singh and Narain, 2010).

Following Thomas and Sharma (1977) four free amino acids have been detected. These amino acids are DL Alanine, DL-Aspartic acid, L-Glutamic acid and L-Histidine HCL. The details about Rf value and spot concentration and coloration have been mentioned in table 1. Out of the four amino acids mentioned above DL-Alanine, DL-Aspartic acid and L-Glutamic acid are glucogenic in nature. L-Histidine HCL is essential amino acid (Malhotra, 1985). Which human system needs for various metabolic activities. The excess use of certain plant like *L. asplenifolia* containing greater amount of glucogenic amino acids lead to a disease known as diabetes mellitus causing loss of libido. As such the Tharu tribe people through look stout and sturdy still people suffer from the most damaging disease diabetes (Vihari and Roy, 1988). In a phytochemical study of *L. asplenifolia* a new flavon asplentin has been isolated and characterized as 5,7,3',4',5' penta hydroxyl 3-3 (3 methyl butyl) flavon. Its glucoside asplenetin 5-0 neohesperido side is also reported (Gupta and Ahmad, 1985). In absence of adequate medical care awareness about diabetes, this disease is not detected easily but the Tharu community are loosing the progenital capacity as such even living lax habit without using any contraceptive or family planning measures Tharu population growth remain very low almost stable.

REFERENCES

- Anand R.K. and Srivastava R.B., 1994. Ethno pharmacological study of *A. lunulatum* Burn F. Indian Fern J., **11**: 137-141.
- Anand R.K., 2000. Bio diversity and tribal association of *Acalypha indica* (L) in Indo-Nepal Himalayan tarai region. Proc. Nat. Acad. Sci. India, **70** (B) II: 153-158.
- Anand R.K. and Srivastava S., 2004. Biodiversity and ethnobotanical study of the Himalayan tarai of Champaran, Bihar. Int. J. Usuf. Mngt., **5**(1&2): 25-34.
- Gupta R.D. and Ahmad B., 1985. Asplenetin, a flavones and its glucoside from *L. asplenifolia*. Phytochemistry, **24** (4): 873-875.
- Malhotra V.K., 1985. Bio Chemistry, Jaypee, N. Delhi.
- Singh U and Narain S., 2010. Traditional treatment of leucoderma by Koltribes of Vindhyan region of Uttar Pradesh, Indian. J. Traditional Knowledge, **9**(1):173-174.
- Thomas R. and Sharma A., 1977. Assessment of Alkaloids in Mutants of *Catharanthes* through chromatography. J. India-Bot. Soc., **58**: 69-71.
- Vihari V. and Roy R.P., 1988. Role of aminoacids of *Nepata hindostana* in tribal Health. J. Indian Bot. Soc., **67**: 902-305.