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Phytochemical Screening Of Nardostachys Jatamansi (Jatamansi): Unveiling Its Therapeutic Bioactive Compounds

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ABSTRACT

Nardostachys jatamansi (commonly known as Jatamansi) is a medicinal plant native to the Himalayan region, widely used in traditional medicine for its therapeutic properties. Phytochemical screening of Jatamansi is essential for identifying its bioactive compounds, which contribute to its pharmacological effects, including anti-inflammatory, antioxidant, and neuroprotective activities. This research presents an overview of the phytochemical constituents found in *Nardostachys jatamansi* and their potential medicinal applications. The preliminary phytochemical analysis of *Nardostachys jatamansi* root and aerial parts reveals the presence of a wide range of bioactive compounds, including alkaloids, flavonoids, tannins, saponins, phenolic compounds, glycosides, and essential oils. Alkaloids such as nardostachysin and jatamansone, found in the roots, are known for their sedative and anticonvulsant effects. Flavonoids, particularly quercetin, contribute to the plant's antioxidant properties, protecting cells from oxidative stress. Tannins and phenolic compounds exhibit strong antimicrobial and anti-inflammatory activities. Saponins and glycosides are noted for their immunomodulatory and anti-cancer properties, suggesting potential therapeutic applications in immune system regulation and cancer treatment. In conclusion, the phytochemical constituents of *Nardostachys jatamansi* play a vital role in its therapeutic efficacy, supporting its use in traditional medicine. However, further research, including clinical trials and advanced pharmacological studies, is necessary to validate its medicinal potential and optimize its therapeutic applications.

Keywords: *Nardostachys jatamansi, Phytochemical, pharmacological herbal drug*

1. INTRODUCTION

Herbal product show attention too several patients and health care practitioners for the rationale that over seventieth of World's population is depends on herbal medicines for a part of their major health care system. In numerous regions and cultures, herbal product area unit used as single herb, combination of herbs, or combination of herb(s) and drug(s). Owing to many aspect effects of medical aid drugs, in recent years there has been a rise within the use of herbal drugs by the bulk of population throughout the planet. Polyherbal formulations with varied active principles and properties are used from ancient days to treat a good vary of human diseases. With regard to things of illness polyherbal formulations area unit cluster of therapeutic entities that area unit developed and arranged on the supply of the healing properties of individual. These variety of herbal formulations shows numerous medical specialty activities that primarily work along in such how to provide highest therapeutic advantages with minimum aspect effects.[1] On the opposite hand, these ancient healthful preparations frequently lost their recognition and grip among individuals owing to the rise therapeutic action of medical aid system of medication. In current years the improved attention has adult on typical herbal remedies as a result of several adverse effects experiential by mistreatment artificial medicine in medical aid drugs. The traditional and oldest healthful remedies are herbal medicines that are better-known to human race from past. Herbs had been utilized by all cultures all the approach through the past however India has one in all the richest, oldest and most different cultural living civilizations connected with the employment of healthful plants. Within the current scenario, the order for herbal product is increasing exponentially all the approach through the planet and foremost pharmaceutical corporations area unit presently conducting wide-ranging analysis on plant materials for his or her doable healthful price.[2]

2. MATERIAL & METHOD

Preparation of plant material:

Collections of plant: The whole plant of *Nardostachys jatamansi* was collected in the month of November- December from Dehradun, Uttarakhand

Washing: The collected plants were washed in tap water so that the dust can be removed and after this the flowers, leaves and stem were soaked in 1% saline water for 5min. to remove microbes.

Drying: Shade dry is recommended for the drying process for protection the rich vitamins and other photosensitive constituents. The plant material was spread on the sterile clean green net in a well ventilated room.

Grinding: Dried plant material was crushed in small pieces and then grinded by electric grinding machine for coarse powder and the powdered was stored in an airtight container which is protected from light and humidity.

Physiochemical standardization:

Determination of Moisture Content (Loss on Drying):

Procedure: For determining the amount of volatile matter (i.e., water drying off from the drug). For substances appearing to contain water as the only volatile constituent, the procedure given below was appropriately used. About 10 g of drug after precisely weighing (exactly weighed to within 0.01 g) it in a tarred evaporating dishes. For example, for ungrounded or unpowderd drug, prepare about 10 g of the sample by cutting shredding so that the parts are about 3 mm in thickness. Avoid the employment of high-speed mills in getting ready the samples, and exercise care that no considerable quantity of wet is lost throughout preparation which the portion taken is representative of the official sample. After placing the above said amount of the drug in the tarred evaporating dish, dry at 105°c for 5 hours, and weigh. Continue the drying and consideration at one-hour interval till the distinction between 2 sequent considerations corresponds to no more than 0.25 percent. Constant weight is reached once 2 consecutive considerations when drying for a half-hour and cooling for a half-hour in the desiccator, shows no more than 0.01 g distinction.

Determination of extractive values:

Extractive value is a measure of the content of the drug extracted by solvents. Extractive value can be water soluble, alcohol soluble and hexane soluble, ethyl acetate.

Water extractive:

Procedure: Air dried 2 gram accurately weighted powdered drug placed in 250 ml of conical flask, macerated 24 hr, with 100 ml of water as a solvent in duplicate with proper marking and put on shaker for 6 hr for extraction allow to stand for 18 hr, after extraction process filter out and be precocious for solvent loss and arrange 2-2 petri plate for each conical flask with proper coding. These plates should be pre-weighted previously, pipette out 10 ml extract for each petri plate from the respective conical flask and dried till the solvent loss.

Formula used for calculation:

10 ml of extract solution contain = x gram extract

100 ml of extract solution contain = x100/10 =10x gram extract 2 gram powdered drug contain = 10x gram extract

100 gram powdered drug contain = 10 × 100/2 gram extract = 500 % = difference in pre weight and final weigh

Alcohol extractive

Procedure: Air dried 2 gram accurately weighted powdered drug placed in 250 ml of conical flask, macerated 24 hr, with 100 ml of alcohol as a solvent in duplicate with proper marking and put on shaker for 6 hr for extraction allow to stand for 18 hr, after extraction process filter out and be precocious for solvent loss and arrange 2-2 petri plate for each conical flask with proper coding. These plates should be pre-weighted previously, pipette out 10 ml extract for each petri plate from the respective conical flask and dried till the solvent loss.

Formula used for calculation:

10 ml of extract solution contain = X gram extract

100 ml of extract solution contain = X 100/10 =10X gram extract

2 gram powdered drug contain = 10X gram extract 100 gram powdered drug contain

n = 10X × 100/2 gram extract = 500X %

X = difference in pre weight and final weight

Ethyl acetate extractive

Procedure: Air dried 2 gram accurately weighted powdered drug placed in 250 ml of conical flask, macerated 24 hr, with 100 ml of hexane as a solvent in duplicate with proper marking and put on shaker for 6 hr for extraction allow to stand for 18 hr, after extraction process filter out and be precocious for solvent loss and arrange 2-2 petri plate for each conical flask with proper coding. These plates should be pre-weighted previously, pipette out 10 ml extract for each petri plate from the respective conical flask and dried till the solvent loss.

10 ml of extract solution contain = X gram extract

100 ml of extract solution contain = X 100/10 =10X gram extract 2 gram powdered drug contain = 10X gram extract

100 gram powdered drug contain = 10X × 100/2 gram extract = 500X % X = difference in pre weight and final weigh

Determination of total ash value:

The residue remain later than incineration is the ash contented of the drug, which basically correspond to inorganic salts, naturally occurring in drug or adhering to it or deliberately added to it as a form of adulteration. Many a time, the crude drugs are admixed with various mineral substances like sand, soil, calcium oxalate, chalk powder or other drugs with different inorganic contents. For determination of total ash, the powdered drug is incinerated so as to burn out all organic matter. Ash value is a criterion to judge the identity or purity of crude drugs. Total ash usually consists of carbonates phosphates, silicates and silica.

Procedure: 2 gram of air dried powdered drug was accurately weighted and put in pre weighted completely dried crucible and place in the muffle furnace at 550 °C after incineration powdered drug converted in to white ash, post weight was taken, difference in weight shows the total ash content.

% Ash value calculated by the formula:

2 gram powdered drug contain = X gram of ash 100 gram powdered drug contain = 100X/2 =50X

X = difference in the weight

Determination of total acid insoluble ash value:

Acid-insoluble ash which is a part total ash insoluble in diluted hydrochloric acid is also recommended for natural drugs. Adhering dirt and sand may be determined by acid-insoluble ash contain.

Procedure: Ash obtain after incineration was dissolved in the 10% 25 ml of the hydrochloric acid, heat for 5 minutes than solution was filtered with the ash less filter paper,after filtration filter paper made to neutralized by washing with the hot water. Took pre-weight of crucible and placed filter paper in the crucible incinerate at 550 °C till white ash obtain.

Formula used for calculation:

2 gram powdered drug contain = X gram acid insoluble ash 100 gram of powdered drug contain = 100X/2 = 50X

X = difference in the weight **Determination of total sugars:-** ***Reagent used:***

80% ethanol, 80% phenol, concentrated sulphuric acid.

Dextrose standard solution: (0.1 mg/ml) dissolve in 100 ml of 80% ethanol.

Procedure: 0.5 gram homogenate of the plant tissue in 80% ethanol. Centrifuge at 2000 rpm for 15 minutes. The supernatant obtained is made up to known volume (generally up to 10 ml or depending on the expected concentration of sugar). Take 0.2 ml aliquot; add 0.1 ml of 80 per cent phenol and 5 ml conc. sulphuric acid, then make up the volume up to 10 ml with 80% ethanol, cool in ice bath. Total sugar was calculated as sucrose (mg/ml) using $y=0.003x + 0.003$, $R^2 = 0.998$ at 490 nm using UV-1 Double beam spectrophotometer, where y was the absorbance and x the dextrose equivalent (mg/ml).

Determination of total starch:

Reagents used:

80%ethanol, 80% perchloric acid, 80% phenol, concentrated sulfuric acid

Starch(soluble)standard solution: (0.1 mg/ml) in 100 ml of distilled water

Procedure: 0.5 gram homogenate of the plant tissue in 80% ethanol was centrifuge at 2000 rpm for 15 minutes. To the residue therefore obtained, put in 4 ml of distilled water, heat on a water bath for 15 minutes and macerate by the help of glass rod. To each of the samples, add 3 ml of 52% perchloric acid and centrifuge at 2000 rpm for 15 minutes. The supernatant thus

obtained is made up to known volume (generally up to 10 ml or depending on the expected concentration of starch). Take 0.1 ml aliquot, add 0.1 ml of 80% phenol and 5 ml conc.sulphuric acid, make up the volume up to 10 ml. Cool and calculate total starch as starch soluble (mg/ml) using y = 0.004x + 0.001, R2 = 0.998, at 490 nm using UV-1 Double beam spectrophotometer, where y was the absorbance and x the starch equivalent (mg/ml).

Determination of total tannins

Regents used:

saturated Sodium carbonate solution: It was prepared by adding 35 g anhydrous sodium carbonate to each 100 ml distilled water, dissolved it at 70-80oc and get cool overnight, filtered through glass wool.

Tannic acid standard solution: (0.1 mg/ml) dissolve 10 mg tannic acid in 100 ml of distilled water.

Folin & Ciocalteu's phenol reagent.

Preparation of standard curve: Standard curve was prepared using tannic acid as standard (10 mg tannic acid in 100 ml of distilled water).

Procedure: Extracted 2 g powdered plant material with 100 ml distilled water by boiling on water bath for 6-8 hrs., filtered and made up the volume to 100 ml volumetric flask. Took 1 ml aliquot of it, added 5 ml Folin & Ciocalteu's reagent, 10 ml saturated sodium carbonate and make up the volume up to 100 ml in volumetric flask. The instrument was calibrated through blank and took the corresponding absorbance of different samples, total tannin content calculated by using y = 0.003x + 0.009, R2 = 0.990, at 760 nm, using UV-1 Double beam spectrophotometer, where y was the absorbance and x the tannic acid equivalent (mg/ml).

Determination of total phenolics

Estimation of Total Phenolic content in the plant was carried out according to modified colorimetric Folin-Ciocalteu method.

Extract preparation: 1 gram air dried powdered drug percolated with pure methanol, three-time filter the extract and lyophilized to dry and was weighted.

Regents used:

7% Sodium carbonate saturated solution: It was prepared by adding 7 g anhydrous sodium carbonate dissolved in 100 ml distilled water, and get cool.

Gallic acid standard solution: (1mg/ml) dissolve 10 mg gallic acid in 10 ml of deionized water.

Folin & Ciocalteu's phenol reagent

Procedure: A volume of 0.5 ml of deionized water and 0.125 ml of a known dilution of the extract were added to a test tube, Folin-Ciocalteu's reagent (0.125 ml) was added to the solution and allowed to react for 6 min. Then, 1.25 ml of 7% sodium carbonate solution was liquated into the test tubes, and the mixture was diluted to the 3 ml with deionized water. The color developed for 90 min, and the absorbance was read at 760nm, 0.002x + 0.051, R2 = 0.998, using UV- 1Double beam spectrophotometer. The measurement was then compared to the standard curve of prepared Gallic acid solution and expressed as milligrams of Gallic acid equivalents per 100g of the sample extract.

Determination of total flavonoids:

Total flavonoid contents of the extract solution based on the formation of a complex flavonoid- aluminium.

Extract preparation: 5 gram of dried powdered leaf, stem and flowers cold percolated with known volume of methanol.

Reagent used:

2% Aluminum chloride

Rutin standard**: 0.1mg/ml solution Methanol**

Phyto-chemical screening:

Phyto-chemical screening comprise of the chemical evaluation of the plant successive extract, these are qualitative test which shows the presence or absence of different type phyto-constituent in plant from successive fraction i.e. Hexane, Chloroform, Ethyl acetate, Methanol, Water by using Soxhlet apparatus(Hot percolation method), subjected to qualitative tests for the identification of various active constituents including, Carbohydrate, Glycoside, Alkaloid, Amino acids, Flavanoids, Fixed oil, Tannins, Gum and Mucilage, Phytosterols.

Chemical requirement:

α-Naphtol, Benedict reagent, Fehling's A and B, conc Sulfuric acid, Ferric chloride, Vanillin hydrochloride

reagent, Sodium hydroxide,Copper sulphate, Millon's reagent, Wagner's reagent, Hager's reagent, Ninhydrin, Dragandroff's reagent etc.

3. RESULT & DISCUSSION

Total moisture percent: Result shows that the all sample have the considerable amount of the moisture percent which are tabulated in table

Table 1: Moisture percent

Parameters	Moisture content %
Loss on Drying at 105°c(LOD)	15.61%

Total Ash value and acid insoluble ash: Result obtained from the current study shows that the plant collected from Dehradun (Uttarakhand) have ash content and acid insoluble ash which recorded in table

Table : 2 Percent total Ash value and acid insoluble ash

Sample	% Total Ash value	% acid insoluble ash
Whole plant	17.02	4.51

Table:3 Observation of Fluorescence Analysis of powdered of *Nardostachys jatamansi*

S.No.	**Experiments**	**Daylight**	**UV-light**	
			254nm	365nm
1	Powder + water	Yellowish brown	Pale yellow	Pale green
2	Powder + a queous NaOH	Yellowish brown	Light brown	Brownish green
3	Powder +alcoholic NaOH	Sea green	Light green	Light green
4	Powder + conc. H2 SO4	Brown	Ambered	Brownish black
5	Powder + conc. HCl	Brownish black	Blackish brown	Brownish black
6	Powder + Nitric acid	Yellow	Yellow	Greenish yellow
7	Powder + 5% ferric chloride	Brown	Brown	Amber green
8	Powder+ Acetone	Yellowish green	Yellow	Greenish
9	Powder + Acetic acid	Greenish brown	Brownish yellow	Light green
10	Powder+ Petroleum ether	Yellowish green	Golden yellow	Light green

Total hexane extractive, ethyl acetate, alcohol extractive, water extractive value: plant was collected from Dehradun (Uttarakhand) have hexane, ethyl acetate, alcohol, water extractive value reported in table.

Table : 4 % extractive value by hot percolation (soxhlet extraction)

Sample	% hexane extractive	% ethyl acetate extractive	% methanol extractive	% water extractive
Plant part	Leaf	Leaf	Leaf	Leaf
% extractive	4.54	5.68	6.34	7.32

Table : 5 % extractive value by cold percolation

Sample	Hydro alcoholic extractive
Plant part	Whole plant
% extractive	16.59

Determination of total sugar contents: Results obtained from present study shows that the level of sugar compound in the 80% ethanolic extract of *Nardostachys jatamansi* is recorded in table 6

Table : 6 Preparation of calibration curves for sugar content.

S.No.	**Concentration**	**Absorbance**
1.	0	0
2.	10	0.0312
3.	20	0.0686
4.	30	0.0992
5.	40	0.1396
6.	50	0.1764

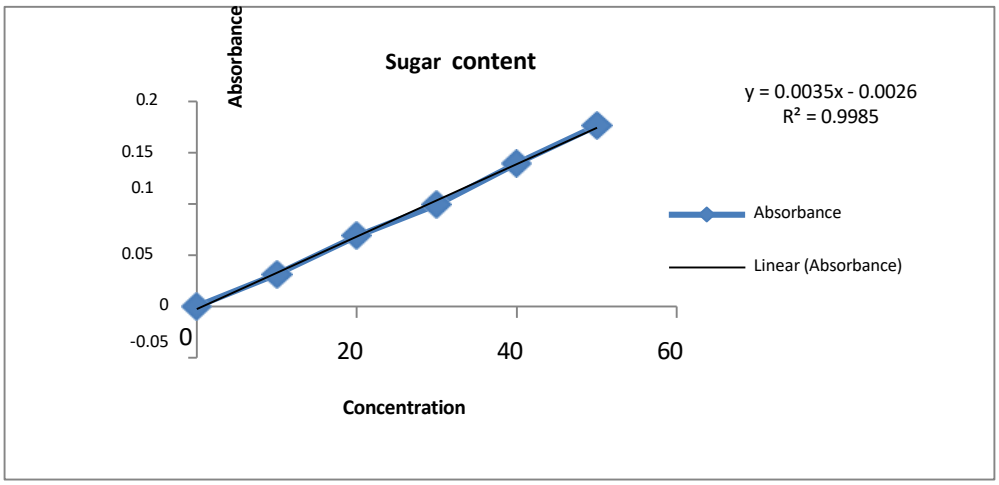

Fig: 1 Absorbance of Sugar content

Table: 7 sugar content in test solution of plant *Nardostachys jatamansi*

S.No.	Concentration(µg/ml)	Absorbance
1	21	0.0802

Table: 8 Determination of total starch contents: Preparation of calibration curve for starch content

S.No.	**Concentration(µg/ml)**	**Absorbance**
1.	0	0
2.	10	0.0352
3.	20	0.0786
4.	30	0.1085
5.	40	0.1504
6.	50	0.1909

Table 8: Preparation of calibration curve for tannin content

S.No.	**Concentration(µg/ml)**	**Absorbance**
1.	0	0
2.	10	0.0350
3.	20	0.0857
4.	30	0.1234
5.	40	0.1870
6.	50	0.2245

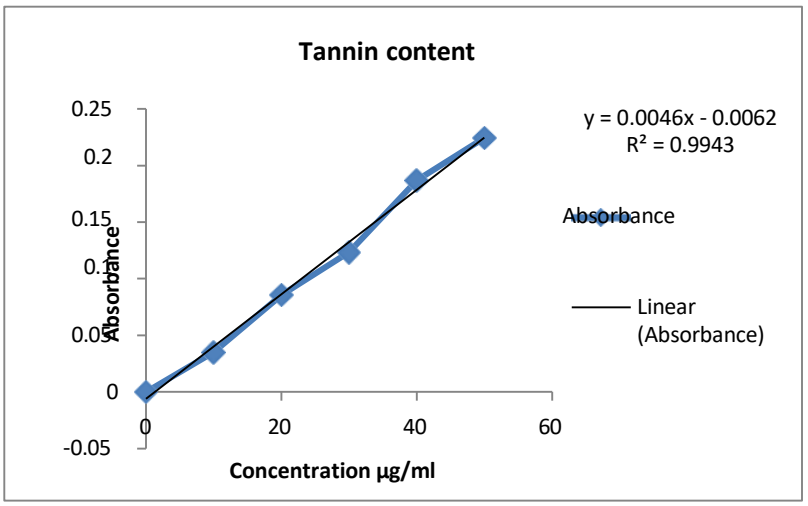

Fig: 2 Absorbance of tannin content

Table : 9 Observation table for tannin content in test solution of plant *Nardostachys jatamansi*

S.No.	Concentration(µg/ml)	Absorbance
1	19.025	0.0805

Determination of total phenolic content:

Table: 10 Preparation of calibration curve for phenolic content

S.No.	**Concentration(µg/ml)**	**Absorbance**
1.	0	0
2.	10	0.0508
3.	20	0.0902
4.	30	0.1242
5.	40	0.1643
6.	50	0.1910

Preliminary phyto-chemical screening:

Table: 11 Phytochemical screening of successive fraction from soxhlet, (+) shows presence, (-) and show absence of content of extract.

S.No.	**Compound**	**Test**	**Ethyl acetate extract**	**Methanol Extract**	**Water extract**
			Leaf	**Leaf**	**Leaf**
1	Carbohydrates	Molish's	+	+	+
		Fehling's	+	+	+
		Benedict's	+	+	+
2	Alkaloids	Dragendroff's	_	+	+
		Mayer's	_	_	_
		Wagner's	+	+	+
		Hager's	+	+	+
3	Tannin	Ferric chloride	_	_	_
		Lead acetate	_	_	+
		Iodine solution	+	_	+
		Acetic acid	_	_	+
4	Test for protein and amino acid	Biuret	_	+	+
		Millon's	_	+	+

		Tyrosine test	–	–	–
		Lead acetate test	–	–	+
		Copper sulphate	–	–	–
5	Flavonoids	Alkaline reagent	+	+	+
6	Glycosides	General test	+	+	+
		Froth test	+	+	+

4. CONCLUSION

The Plant Nardostachys Jatamanshi is are reputed Ayurvadic herb and it is the major ingredients in Ayurvadic formulation for treatment of various disorder mainly central nervous disorder. During my project I get that my compound have are carbohydrate, alkaloids, tannins, proteins, amino acids, alkaloids and Glycosides as important compounds there for its having important in field of pharmacy we observed that whole part of plant having pharmaceutical important . The sample of Nardostachys jatamanshi is collected in three different seasons such as Versa Hemant, and Sarad, Ritu and investigated for morphological, analytical parameter and in vitro antimicrobial activity, Pharmacognositically they are almost similar except for xylem cells.

REFERENCES

[1] Jyotsna S. S., Sonali S. K., Suchita L. S., Sushmita S. C., Sonali B. H., Need of Polyherbal Formulations and Its, Standardization: A Review, World Journal of Pharmacy and Pharmaceutical Sciences, Vol. 5(11), pp. 526-533.

[2] Obidike I., Salawu O., Screening of Herbal Medicines for Potential Toxicities, New Insights into Toxicity and Drug Testing, 2013, pp. 64-70.

[3] Sanjoy K. P., Yogeshwer S., Herbal Medicine: Current Status and the Future, Asian Pacific Journal of Cancer Prevention, Vol. 4, 2003, 281-290.

[4] V. P. Kamboj, Herbal medicine, Current Science, Vol. 78(1), 2010, 35-50.

[5] Mohd. M., Taqi A.K., Firoz M., Medicinal Plants of Rural India: A Review of Use by Indian Folks, Indo Global Journal of Pharmaceutical Sciences, Vol. 2(3), 2012, 286-304.

[6] S.M.K. Rates, Plants as source of drugs, Toxicon, Vol. 39, 2001, 603–613.

[7] Arun R., Sravya R.B, Roja C., A Review on Standardisation of Herbal Formulation, International Journal of Phytotherapy, Vol 2(2), 2012, 74-88.

[8] Vijay, K.P., Chauhan, R.S., Harish C.A., Prasad, P., Nautiyal, M.C. and Nautiyal, A.R., 2012. *Nardostachys jatamansi* DC: Conservation, multiplication and policy issues. *Medicinal plants*, Vol. 4(3): pp.1-5.

[9] Purnima, Meenakshi, B., and Preeti K., 2015. A review article on phytochemistry and pharmacological profiles of *Nardostachys jatamansi* DC-medicinal herb. *Journal of phytochemistry and pharmacognosy*, Vol. 3(5): pp. 102-106.

[10] Jadhav, V.M., Thorat, R.M., Kadam, V.J., and Kamble, S.S., 2009. Herbal anxiolyte:

[11] *Nardostachys jatamansi. Journal of pharmacy and research*, Vol. 2(8): pp. 1208-1211.

[12] The ayurvedic pharmacopoeia of India. 1964. Government of India Ministry of Health and Family Welfare Department of Ayush, Part 1, Vol. 1: pp. 79-81.

[13] Singh, V., Dubey, P., Srivastava, S., and Rawat, A.K.S., 2011. Botanical standardization of the *jatamansi* their

substitute and adultrant species. *India journal of traditional knowledge,* Vol. 10(4): pp. 599-603.

[14] Uma, M.S., Vijayata, G., Vivekanand, P.R., Rakesh, S.S., Manoj, K.Y., 2013. A review on biological activities and conservation of endangered medicinal herb *Nardostachys jatamansi.* Vol. 3: pp. 113-124.

[15] Chaterjee, A., Basak, B., Datta, U., Banerji, J., Neuman., and Prenge, T., 2005. Studies on chemical constituents of of *Nardostachys jatamansi* DC (Valerianaceae). Vol. 44B: pp. 430- 433.

[16] Nasrolah, G.D., Ebrahim, S., Hamed, S.K., Mahtab, K., Seyyed-Masih H., 2014. Identification of chemical compounds of *Nardostachys Jatamansi* essence available in Iran, Journal of Herbmed Pharmacology, 3(2), 83-86.

[17] Amit, K.M., Sunil, K, 2013. A Phytopharmacological Review on N. Jatamansi. *An International Journal of Pharmacy Research,* Vol. 9(02): pp. 21-32.

[18] Ashfaq, A., Munavvar, Z.A.S., Hassaan, A.R., Tabinda, F., Safia, A.K., Sheryar, A., Mohamed, L., Fiaz, U.A. and Eseyin, O., 2013. Pharmacological importance of *Nardostachys jatamansi* DC: A potential therapeutic agent in different pathological ailments. *Journal of chemical and pharmaceutical Research,* Vol. *5*(10): pp. 431-438.

[19] Sharma N, Sharma A.R., Patel B.D., Shrestha K. Investigation on phytochemical, antimicrobial activity and essential oil constituents of *Nardostachys jatamansi* DC. in different regions of Nepal. Journal of Coastal life medicine, 2016; Vol. 4(1): pp. 56-60.

[20] Syed AR, Syed AA. Anti-ulcer activity of *Nardostachys jatamansi* against pylorous ligation induced gastric ulcer. Scholars Journal of Applied Medical Science, 2016; 4(8E): pp. 3048- 3055.

[21] Foroogh N, Mohammad EA, Elahe A, Niloufar G, Khadijeh N. Angiotensin I Converting Enzyme Inhibitory Activities of Hydroalcoholic Extracts of *Nardostachys jatamansi*, *Prangos ferulacea* and *Marrubium vulgare*. 2015; pp. 1-11.

[22] Sivajothi V, Shruthi SD, Sudha Bhargavi, and A Muthukumar. Evaluation of *In-vitro* Cytotoxicity of *Monochoria vaginalis*, *Ipomoea carnea*, *Nardostachys Jatamansi* Extracts on Hela Cells. Research Journal of Pharmaceutical, Biological and Chemical Sciences, 2015; 6(4): pp. 698-705.

[23] Toolika E, Ravi M, Narayana PB, Suhas KS, Ravishankar B, Savitha HP. A comparative pharmacological study on the effect of Tagara (Valeriana wallichii) and Jatamansi (*Nardostachys jatamansi*) in the management of anidra w.s.r to primary insomnia. The Journal of Phytopharmacology, 2015; 4(3): pp. 147-151.

[24] Aleem MA, Syed Asad B, Tasneem M, Riyaz Ahmed K, M. Farooq A, Anjum A and M. Ibrahim. Antidiabetic Activity of Hydroalcoholic Extracts of *Nardostachys jatamansi* in Alloxan-induced Diabetic Rats. British Journal of Medicine & Medical Research, 2014; 4(28): pp. 4665-4673.

[25] Digvijay GK, Netaji TN, Nitin BG and Shrinivas KS. Evaluation of diuretic activity of ethanolic and petroleum ether extracts of *Nardostachys jatamansi* DC roots in rats. 2014; 5(4): pp. 27-31.

[26] Rajnish KS, Vaishali, Susanta KP, Padala NM, Ghanashyam P, Pramod K, Ramesh KG. Evaluation of anti-inflammatory potential of Nardostachys jatamansi rhizome in experimental rodents. Journal of coastal life medicines, 2014; 2(1): pp. 38-43.

[27] Xin Chao Liu and Zhi Long Liu. Evaluation of insecticidal activity of *Nardostachys jatamansi* essential oil against some grain storage insects. Journal of Entomology and Zoology Studies, 2014; 2(4): pp. 335-340.

[28] Damodara G KM, Lathika S, Krishna A.P, Suchetha Kumari N, Ganesh S, Naveen P. & Sharada V. Ethanolic extractr of Nardostachys Jatamansi potentiates haematopoietic system in albino wistar rats. Journal of Health Sciences, 2013; Vol. 3: pp. 25-29.

[29] Deepa B, Shucheta K, Sateesh Rao. Antidepressant activity of *Nardostachys jatamansi* in electron beam irradiated light. 2013; 4(1): pp. 101-103.

[30] Madhulika B, Renu Moti P and Ajit K. In vitro and In vivo Biological Activities of Nardostachys Jatamansi Root. 2013; pp. 1-10.

[31] Madhu L.N., Suchetha k., Naveen and Sanjeev. Protective Effect of Nardostachys jatamansi Against Radiation -induced Damage at Biochemical and Chromosomal Levels in Swiss Albino Mice. Indian Journal of Pharmaceutical Sciences, 2012; pp. 460-470.

[32] Rasheed A, Venkataraman S, Jayaveera KN and Mohammed YJ. Phytochemical, Toxicological Evaluation and Anticataleptic Activity of *Nardostachys Jatamansi.* Asian Journal of Pharmaceutical and Clinical Research, 2012; Vol. 5: pp. 200-206.

[33] Velpandian V, Sathya B, Mohammed M, Anbu N. A Clinical Evaluation of Nardostachys jatamansi in the Management of Essential Hypertension. International Journal of Pharmaceutical and Phytopharmacological Research, 2012; 2(2): pp. 96-100.

[34] Zahida P, Saima S, Muafia S, Shaista JK and Razia K. Volatile constituents, antibacterial and antioxidant activities of essential oil from *nardostachys jatamansi* DC roots. 2011; Vol. 3:pp. 329-337.

[35] Nazmun L, Dipankar B, Tapas K.S, Santanu M, Shurita P, Suparna C, and Antony G. Stress modulating antioxidant effect of *Nardostachys jatamansi.* Indian Journal of Biochemistry and Biophysics, 2009; Vol. 46: pp. 93-98.

[36] Shubhasini R, Ganapargasam A, Senthilkumar S, Yoogeta S.K, Deveki T. Protective efficacy of N. jatamansi (rhizomes) on mitochondrial respiration and lysosomal hydrolases during doxorubicin induced myocardial injury in rats. Journal of health sciences, 2007; 53(1): pp. 67-76.

[37] National cholesterol education program: Second report of the expert panel on detection, evaluation and treatment of high blood cholesterol in adults, Vol. 89, 1994, 1333-1445.

[38] National Cholesterol Education Program, ATP III Guidelines At-A-Glance Quick Desk Reference, Determine lipoprotein levels–obtain complete lipoprotein profile after 9- to 12- hour fast, Vol 85, 1990, 1567-1570.

[39] Huynh Ngoc T, Nguyen Ngoc Q, Tran T Van A,Vo Phung N. Hypolipidemic Effect of Extracts from Abelmoschus esculentus L. (Malvaceae) on Tyloxapol-Induced Hyperlipidemia in Mice: Mahidol University. Journal of Pharmaceutical Sciences, Vol. 35(1- 4), 2008, 42-46.

[40] Kishor J.S., Kathivarin M.K, Rahul S., Journal of the biology and chemistry of hyperlipidemia. Bioorganic and Medicinal Chemistry, Vol. 15, 2007, 4674-4699.

[41] Ankur R., Nidhi D., Seema R., Amarjeet D., Ashok K., Hyperlipidemia- A Deadly Pathological Condition, International Journal of Current Pharmaceutical Research, Vol. 4(3), 2012, 15-18.