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Effects of *Nardostachys jatamansi* extract on inflammatory and oxidative stress markers in hypertensive, hyperglycaemic patients: an open-label, prospective study

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Article History:	ABSTRACT
Received on: 17.09.2017 Revised on: 11.07.2018 Accepted on: 19.07.2018	Continued oxidative stress can lead to chronic inflammation, which in turn could mediate most chronic diseases including cancer, diabetes, and cardiovascular, neurological and pulmonary diseases. Oxidation should be arrested in the cells as it leads to chain reactions followed by cell damage. Inflammation induces various chemicals due to which redness and warmth appear at the site of inflammation. Current treatment packages available in the market which may be of allopathic or nutritional are unable to control the mortality of cancer. On the contrary allopathic leads to side effects and increasing the risk of the patient, so there is an immense need for other treatment cum management packages are to be explored in particular from medicinal plants. Jatamansi (<i>Nardostachys jatamansi</i>) appears to be one of the prospective herbal single drugs which can address oxidative stress and inflammatory situations. Jatmansi showed encouraging anti-inflammatory activity and anti-oxidant activity, thereby being a small study, future investigation of <i>Nardostachys jatamansi</i> extract required for better understanding the molecular mechanism is yet to be performed.
Keywords:	
C-reactive protein, Glutathione, IL-6, Inflammation, Malondialdehyde, Oxidative stress	



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INTRODUCTION

It is well established that inflammation and oxidative stress plays a significant role and may be causative factors in many diseases like diabetes, hypertension, autoimmune diseases, cancer and many

more diseases and disorders. *Nardostachys jatamansi* [Family *Valerianaceae*] is a perennial herb found in Alpine Himalayas (Sanchez, A., 2015)

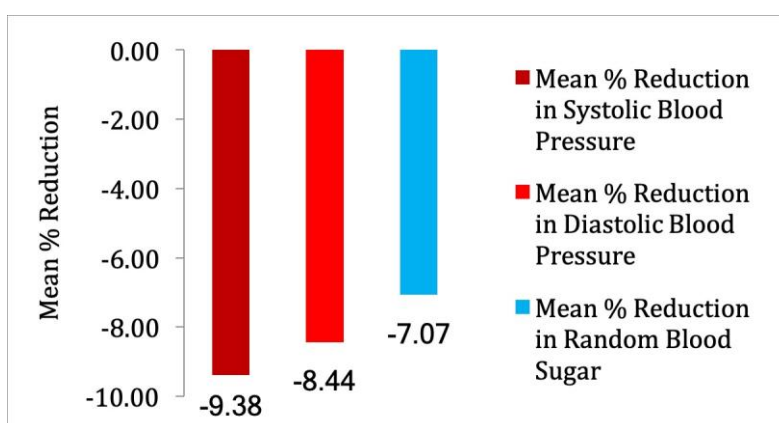
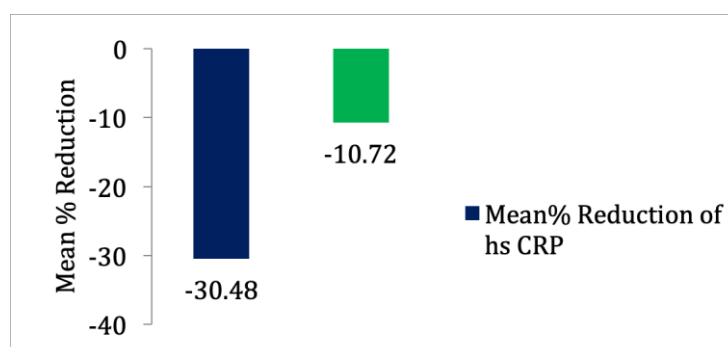
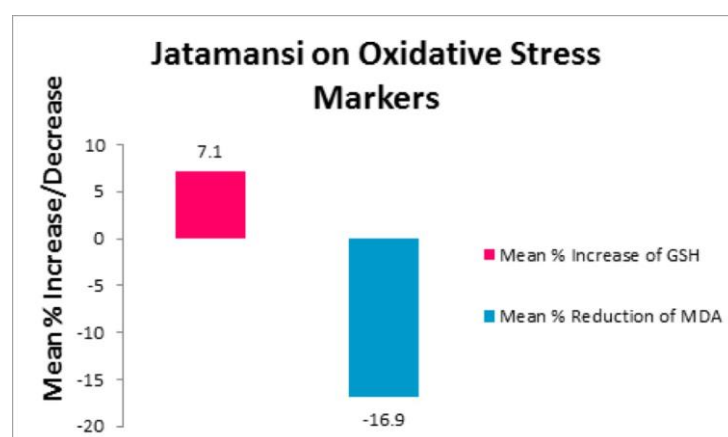
EXPERIMENTAL METHODOLOGY

Methods: Jatamansi liquid 10 ml contains 500 mg of extract equivalent to 2.5 grams raw herb is given twice a day on an open-label study to ten subjects suffering from diabetes and hypertension for 15 days and observation of Random Blood Sugar, High Sensitivity C Reactive Protein, IL 6, Glutathione and Malondialdehyde tests are done (Al-Nashi *et al.*, 2013).

Sample Preparation: To 0.5 ml of serum in a polypropylene tube, add 500µl of 30% trichloroacetic acid and 100µl of 1% thiobarbituric acid. Tightly cap the test tube and vortex for 30 seconds. Keep the test tube in a water bath at 85°C for 1hour. Then take out the test tubes and keep them in

Table 1: Observed baseline values (blood pressure, random blood sugar, C - reactive protein, interleukin 6, glutathione, malondialdehyde)

S.No	Age (years)	Weight (kgs)	Height (cms)	Systolic/Diastolic	Random Blood Sugar	hs – CRP	IL – 6	GSH	MDA
1 F	52	78	153	150/95	176	8.4	2.067	277.8	5.8
2 M	70	104	184	160/90	187	9.2	2.387	324.6	7.2
3 M	72	56	158	150/90	152	6.7	1.932	268.6	4.6
4 M	55	67	173	145/95	158	4.2	1.942	186.4	4.4
5 M	60	66	169	140/94	136	3.8	1.342	188.6	3.6
6 F	42	54	170	150/90	132	3.6	1.42	165	3.4
7 M	64	68	155	160/90	178	4.2	1.980	192.8	4.2
8 F	52	54	152	170/95	190	5.8	2.156	315.5	6.8
9 F	49	55	154	150/90	158	6.9	1.51	196.2	5.3
10 M	45	65	168	160/95	145	5.6	1.982	187.2	5.6

**Figure 1: Jatamansi extract effect on blood pressure and random blood sugar values****Figure 2: Jatamansi extract effect on inflammatory markers. CRP = C-reactive protein, IL-6 = Interleukin – 6****Figure 3: Nardostachys Jatamansi extracts effect on oxidative stress markers. GSH = Glutathione, MDA = Malondialdehyde**

ice-cold water for 10 minutes. Centrifuge at 10000 rpm for 5 minutes. Read the absorbance of the supernatant at 540nm against blank. The concentration of MDA was read from standard calibration curve plotted using 1,1,3,3, ethoxy propane (Al-Grawi *et al.*, 2018). The results are expressed in nanomoles of MDA per ml of serum. 0.5 ml of distilled water used as blank in place of serum (Al-Thahab *et al.*, 2018; Lateef *et al.*, 2018).

RESULTS AND DISCUSSION

Out of 10 subjects, four are female and rest are male persons, in that 6 are diabetic and hypertensive and 4 are only hypertensive. The Jatamansi liquid extract was given for 15 days only.

There is an average reduction of Systolic Blood Pressure from 153.50 to 141.70 and Diastolic Blood Pressure from 92.40 to 84.60. The average value of Random blood sugar reduced from 161.20 mg/dl to 149.80 mg/dl, average High Sensitive CRP reduced from 5.84 to 2.91, average IL 6 reduced from 1.872 to 1.594, average Glutathione improved from 230.30 to 246.58 and average Malondialdehyde (MDA) reduced from 5.1 to 4.2. The present data clearly show a positive effect of Jatamansi root extract on bringing down random blood sugar, Highly sensitive CRP and IL6 showing its sugar lowering and anti-inflammatory activity, also Jatamansi also showing anti-oxidant activity and capability of reducing oxidative stress by improving Glutathione values and bringing down Malondialdehyde (MDA) values.

CONCLUSION

To sum up the study – Jatmansi showed encouraging anti-inflammatory activity and antioxidant activity, thereby being a small study, future investigation of *Nardostachys Jatamansi* extract required for better understanding the molecular mechanism associated with the observed protection, keeping the fact in view that as on date inflammation and oxidative stress role is widely distributed including Atherosclerosis, Coronary Artery disease, diabetic vascular complications, Obesity and Cancer.

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