Indian Journal of Research in Homoeopathy

Volume 3 | Issue 2 Article 7

1-6-2009

Effect of Three Potentized Homoeopathic Drugs on Alcohol-induced Changes in the Nerve Plexus of Heart and Serum Parameters in Albino Rats

N C. Sukul
Dept. of Zoology, Vishwa-Bharati University, Santiniketan - 731235, West Bengal.
Raj k. Singh
Dept. of Zoology, Vishwa-Bharati University, Santiniketan - 731235, West Bengal.
S P. Sinhababu
Dept. of Zoology, Vishwa-Bharati University, Santiniketan - 731235, West Bengal.

How to cite this article

Sukul NC, Singh Rk, Sinhababu SP. Effect of Three Potentized Homoeopathic Drugs on Alcohol-induced Changes in the Nerve Plexus of Heart and Serum Parameters in Albino Rats. Indian J Res Homoeopathy 2009;3(2):53-55. doi: 10.53945/2320-7094.1855

Effect of Three Potentized Homoeopathic Drugs on Alcohol-induced Changes in the Nerve Plexus of Heart and Serum Parameters in Albino Rats

Abstract

Rats were given 20% alcohol as compulsory drink for 6 months. They were treated separately with Nux vom 30, Chelidonium 30 & Carbon sulph 30, one dose daily for 30 days in the 6th month. After 6 months all the rats were autopsied & their blood samples were taken for serological tests. Atrio- ventricular valves of the rats were taken out, processed & examined for adrenergic nerve plexuses. Treatment with Nux vom 30 & Chelidonium 30 reduced significantly alcohol-induced degeneration of adrenergic nerve plexuses of rats as compared to the untreated control of alcohol fed rats. These two homoeopathic potencies also significantly reduced the alcohol-induced increase in AST, SGOT, total cholesterol & triglyceride in serum as compared to the untreated alcohol-fed control. The results very clearly demonstrate that homoeopathic potencies are capable of changing both anatomical & biochemical parameters in animals.

EXTRA MURAL RESEARCH

Effect of Three Potentized Homoeopathic Drugs on Alcohol-induced Changes in the Nerve Plexus of Heart and Serum Parameters in Albino Rats

N.C. Sukul, Raj K. Singh and S.P. Sinhababu

Department of Zoology, Vishwa-Bharati University, Santiniketan-731235, West Bengal

Rats were given 20% alcohol as compulsory drink for 6 months. They were treated separately with *Nux vom 30, Chelidonium 30 & Carbon sulph 30,* one dose daily for 30 days in the 6th month. After 6 months all the rats were autopsied & their blood samples were taken for serological tests. Atrio-ventricular valves of the rats were taken out, processed & examined for adrenergic nerve plexuses. Treatment with *Nux vom 30 & Chelidonium 30* reduced significantly alcohol-induced degeneration of adrenergic nerve plexuses of rats as compared to the untreated control of alcohol fed rats. These two homoeopathic potencies also significantly reduced the alcohol-induced increase in AST, SGOT, total cholesterol & triglyceride in serum as compared to the untreated alcohol-fed control. The results very clearly demonstrate that homoeopathic potencies are capable of changing both anatomical & biochemical parameters in animals.

Key words: homoeopathic drugs, alcohol, adrenergic nerve plexus, AST, SGOT, cholesterol, triglyceride.

Introduction

Alcoholism is a major health problem throughout the world. There is no good remedy for either acute or chronic alcoholism. We have been testing the efficacy of some homoeopathic drugs against both acute and chronic alcoholism in mice and rats for more than a decade in our laboratory. Earlier we observed that *Nux vomica 30c* reduced alcohol induced sleep time in albino mice (Sukul *et.al*,1999). We further observed that the mother tincture of *Nux vomica* as well as its 30th potency reduced voluntary ethanol intake in rats (Sukul *et,al*.2001). Consumption of white rum containing 40% alcohol over a long period results in degeneration of atrio-ventricular nerve plexuses in albino rats (Ferreira *et, al.,* 1975). Treatment with *Nux vomica 30c* helped in the restoration of the adrenergic nerve plexuses to a great extent (Sukul *et, al.,* 1998). The purpose of the present study is to see whether *Nux vomica 30c, Carbon sulph 30c and Chelidonium 30c* could restore the alcohol-induced degeneration of nerve plexuses in the heart valves of rats. We futher want to see whether treatment with these three potentized drugs could restore the alcohol-induced changes in some serological parameters to some extent.

Materials and Methods

a) Experiments on nerve plexuses of heart valves

Five groups of albino rats of Charles Foster strain were kept individually in rat cages in the animal house with natural light and dark cycles. Each group consisted of 20 individuals. The animals were kept on rat feed and drink *ad libitum*. The cages were cleaned twice everyday. Experiment was started 15 days after shipment and continued for 6 months. The rats weighed between 198 and 220g. Treatment of the group was as follows:

Group I : Rats kept on normal feed and water as drink.
Group II : Rats on normal feed and 20% alcohol as drink.
Group III : Rats on normal feed and 20% alcohol as drink. This group was treated orally with *Nux vom 30*, one dose daily, for one month in the 6th month.
Group IV : Rats on normal feed and 20% alcohol. They were treated with *Carbon sulph 30,* one dose daily, for one month in the 6th month.
Group V : Rats on normal feed and 20% alcohol. They were treated with *Chelidonium 30* one dose daily, for one month in the 6th month.

Homoeopathic drugs were purchased from Seth Dey & Co. Kolkata. Each drug was diluted with sterile distilled water 1:100 and administered with a micropipette at a dose of 0.1 ml/rat. In case of the control group (II) 90% alcohol was diluted with distilled water 1:100 and given orally to a rat at the same dose. Absolute alcohol was purchased from Bengal Chemicals and Pharmaceuticals Ltd., Kolkata and

mixed with sterile distilled water to prepare alcoholic drinks for the rats.

After 6 months all the rats of the 5 groups were autopsied and their atrio-ventricular valves taken out. The valves were washed in cold calcium-free Tyrode's solution, mounted whole on glass slides and allowed to dry in air at room temperature with relative humidity maintained at 50%. The tissue samples were then treated with formaldehyde gas generated from paraformaldehyde at 80º C for 1 hr, mounted with immersion oil and examined under a microscope (Ferreira *et, al.,* 1975. Sukul *et, al.,* 1998).

b) Experiments on serological parameters.

Before taking the heart valves blood samples were collected from the heart of each group of rats. The blood was allowed to coagulate in cerntrifuge tubes at 35º C and centrifuged to separate the serum. Using standard kits and a **UV-VIS** spectrophotometer the serum samples were analysed for glutamate-oxaloacetate transaminase **(SGOT),** aspartate aminotransferase **(AST),** cholesterol and triglyceride.

Results

Adrenergic nerve plexuses in the atrio-ventricular valves showed uniform density in healthy non-alcoholic control groups of animals. Average consumption of alcoholic drinks per day was almost same in the four alcoholic groups of rats (II, III, IV, V). Nerve plexuses in group II, the placebo-treated control group, showed maximum degeneration of nerve plexuses in spots. The total area of degeneration was measured for each slide by a micrometer and expressed as a percentage of degeneration. The mean ± S.E of the data was calculated for each group. The difference between a treatment group and the placebo alcoholic group was compared by the student t-test. The results are presented in Table 1. It is evident from the table that both *Nux vom 30* and *Chelidonium 30* reduced degeneration of nerve plexuses significantly ($P< 0.05$). Treatment with *Carbon sulph 30* did not produce any significant improvement in this respect (Table 1). In case of serum parameters the mean and standard errors for each group and control I (water as drink) and control II (alcohol as drink) were tested separately by the student t-tests. The results are presented in Table 2. Consumption of alcohol showed a significant increase ($P<0.05$) in all the serum parameters tested as compared to the non-alcoholic control group I. Both *Nux vom 30* and *Chelidonium 30* reduced the level of serum parameters significantly ($P<0.05$) as compared to the alcoholic control group II. Here also *Carbon sulph 30* did not show any significant improvement (Table 2).

Discussion

Alcohol adversely affects nearly all organs interfering with either cell- membrane functioning, intracellular respiration or energy processing in most body cells especially those in the central nervous system (Li et al. 1994. Jun-Fu and Peng. 2001). In the present study we see that *Nux vom 30* and *Chelidonium 30* could reduce alcohol-induced degeneration of atrio-ventricular nerve plexuses in rats. Earlier Sukul *et al. (1998)* observed this effect with *Nux vom 30* alone. The present study further confirms the earlier results and also shows the positive therapeutic effect of *Chelidonium 30* in this respect.

During the treatment period animals continued to consume alcohol usually. It appears that the therapeutic effect of the two homoeopathic potencies would have

Table 1. Effects of potentized homoeopathic drugs on the alcohol degeneration of atrio-ventricular nerve plexus in albino rats. Rats were on 20% ethanol as drink for 6 months after which their atrio-ventricular valves were examined for degeneration of nerve plexus. The treatment was given through the oral route, one dose daily, for 30 days in the 6th month.

S.No.	Treatment	% degeneration of nerve plexuses
1	Untreated rats on water as the only drink	0
2	Untreated rats on 20% ethanol as drink	40±5
3	Rats on 20% ethanol treated orally with Nux vom	30 20±3*
4	Rats on 20% ethanol treated orally with Carbon sulph 30	38±4
5	Rats on 20% ethanol treated orally with Chelidonium 30	23±4

* Significant difference from the untreated alcoholic control ($P<0.05$) by the student t= test. N=20. Mean ± SEM.

Table 2. Effect of homeopathic potencies on some serum parameters in alcohol -- fed rats. Rats were given 20% ethanol as compulsory drink with normal feed for 6 months. The treatment was given through the oral route, one dose daily, for 30 days in the 6th month.

Parameters	Control I water as drink	Control II 20% ethanol as drink	20% ethanol as drink + Nux 30	20% ethanol as drink + *Carbon sul* 30	20% ethanol as drink + *Chel* 30	F-value (One way ANOVA)
SGO (units/l)	24±0.68	38±0.53*a (58.3)	26±0.48*b (31.6)	37±0.64 (2.6)	25±0.8*b (34.2)	23.79*
AST (units/l)	28±0.95	35±0.48*a (25)	30±055*b (14.3)	36±0.57 (2.8)	29±0.54*b (17.1)	32.23*
Total Cholesterol	104±7.27	115±1.14*a (10.6)	102±0.74*b (11.3)	110±0.91 (4.3)	106±0.49*b (7.8)	2.4*
Triglyceride	328±7.5	345±4.49 (5.2)	324±3.73 (6.2)	344±3.81 (0.29)	330±3.3 (4.3)	2.66*

Mean ± SEM, n=20
*a = Significant difference ($p<0.05$) from Control I by t-test in the same row.
*b = Significant difference ($p<0.05$) from Control II by t-test in the same row.
* = Significant difference ($p<0.05$) in the same row by ANOVA.
Figures in parentheses indicate % increase in column 3 as compared to column 2 and % decrease / increase in column 4, 5, 6 as compared to column 3.

been more pronounced had the animals been prevented from alcohol drinking during treatment. Restoration of damaged adrenergic nerve plexuses means restoration of autonomic function. So, both the homeopathic potencies are capable of restoring alcohol-induced autonomic dysfunction.

Serum transaminase levels rise as a result of damage to many active cells from pathologic processes. As for example AST level rises following myocardial infraction (Ganong, 1999). An increase in level of AST and SGOT indicates heart and liver damage caused by heart attack, drug toxicity and infection. Usually these aminotransferases leak from the injured heart cells into the blood stream (Nelson and Cox, 2000). In the present experiment animals did not suffer any heart attack but there was damage to the heart tissue due to alcohol toxicity. For this, there was a rise in the level of AST and SGOT in the alcoholic rats. Both *Nux vom 30* and *Chelidonium 30* reduced the level of two enzymes in blood (Table 2) Cholesterol and triglyceride usually increase in the blood of diabetics (Ganong. 1999). Alcohol is known to induce an increase in high-density lipoprotein-cholesterol (Wiel *et al.*2001). In our study there was a significant increase in both total cholesterol and triglyceride due to alcohol consumption. Both *Chelidonium 30* and *Nux vom 30* reduced the level of triglyceride and cholesterol significantly as compared to the untreated control. *Carbon sulph 30* did not show any positive effect with respect to the serological parameters (Table 2). The results show that homeopathic potencies could bring about a change in anatomical and biochemical parameters in animals.

Acknowledgement

We are beholden to the Department of AYUSH, Ministry of Health, and Government of India for a grant to support the present study.

References

1. Ferreira A. L, Santos J.C.M, Ross M.A. Effects of alcohol ingestion on adrenergic nerve endings of rat atrio-ventricular valves. Experimentia 31, 1975: 82-83.
2. Ganong WF. Review of Medical physiology, 19th edn. London, Prentice-Hall International Inc.1999.
3. Jun-Fu Z. Peng C. Studies on the oxidative stress in alcohol abusers in China. Biomed Environ Sci 14, 2001:180-188.
4. Li C, Peoples R W, Weight F F. Alcohol action on a neuronal membrane receptor: evidence for a direct interaction with the receptor protein. Proc Natl Acad Sci USA 91, 1994: 8200-8204.
5. Nelson D L, Cox M M. Lehninger Principles of Biochemistry, 3rd edn. USA, Macmillan Worth Publishers, 2000.
6. Sukul N C, Ghosh S, Sinhababu S.P. High dilution effects of *Strychnos nux-vomica* L on hypothalamic neurons and adrenergic nerve endings of alcoholic rats. In Taddei-Ferretti C and Marotta P editors. High dilution effects on cells and integrated systems. Singapore: World Scientific; 1998 p. 218-223.
7. Sukul N C, Ghosh S, Sinhababu S P, Sukul A. *Strychnos nux-vomica* extract and its ultra high dilution reduce voluntary ethanol intake in rats. J Alt Comp Med 7, 2001: 187-193.
8. Sukul A, Sinhababu S P, Sukul N C. Reduction of alcohol induced sleep time in albino mice by potentized *Nux vomica* prepared with 90% ethanol. Br Hom J 88, 1999:58-61.