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Evaluation of learning memory activity of *Unmad Gaja Kesari Rasa* II in Animal Models

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ABSTRACT

In recent era there is competition in each and every field, so there is lot of mental stress or mental disorder seen. In modern medicine there are various drugs such as antipsychotic, antiepileptic, mood stabilizer etc. which have certain adverse effect such as drowsiness, dizziness, memory loss etc. But Ayurveda certainly has an answer, there are total 112 formulations mentioned in classical text for physco neurological disorder i.e., Unmad and Apasmar, out of these there are total 25 herbo-mineral formulations and Unmad Gaja Kesari Rasa II (UGK II) is one of them. Present study was done to evaluate Learning memory effect of Unmad Gaja Kesari Rasa II a herbo-mineral compound. Cook's & widely model was used to evaluate learning memory activity. Total 30 wistar rats were classified into 5 groups each containing 6 rats. Human dose was extrapolated with extrapolating factor 0.018 and drug dose was given to control I and II, standard, test x and 2x group, after that learning and Relearning trails were given and avoidance, escape and no response was observed. It has been established that UGK II (Rasa Kamdhenu i.e.; R.K Unmad Chikitsa/9-12) has effective role in learning and memory activity.

Key words: *Unmad Gaja Kesari Rasa II, Cook's and widely model, Learning Memory activity, Neurological disorder.*

INTRODUCTION

Herbal medicines are the oldest remedies known to mankind. Man's dependence on plants for health care is as old as the civilization. Herbs had been used by all cultures throughout history but India has one of the oldest, richest and most diverse cultural living traditions associated with the use of Medicinal plants. It is being globally recognized that medicinal plants play a significant role in providing health benefits to human beings. Major Pharmaceutical companies are currently conducting extensive research on plant materials for their potential medicinal value.

With the introduction of allopathic drugs, the use of crude drugs from medicinal plants is on the decline and subsequently this traditional knowledge may be lost in the near future. These observations have led to a shift in focus to the use of herbal remedies in the management of epileptic seizures and enhancing memory. In the recent era there is competition in each and every field, so there is lot of mental stress or mental disorder seen. World-wide depression is ranked as the leading cause of disability and affecting 120 million people.[1]

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MATERIALS AND METHODS

Pharmaceutical study

UGK II was prepared according to Rasakamdhenu Nidan chikitsa 9-12. Ingrediants used were Parad, Gandhak, Vacha Kwatha [decoctation], *Shankhapushpi*

ISSN: 2456-3110 **ORIGINAL ARTICLE** Jan-Feb 2020

Swarasa [Juice] and *Gomutra*. Steps involved in preparation of UGK II were as follows; Shodhan process of raw mineral drugs was done, Prepration of *Vacha Kwath* following S.O.P. was prepared than trituration of *Parad* was done with *Vacha Kwatha*. Than prepration of *Shankhpushpi Swaras* following S.O.P. was prepared than trituration of *Gandhak* was done with *Shakhapushpi Swarasa.* Than trituration of *Bhavita Parad* and *Bhavita Gandhak* with *Gomutra* was done. Than medicine was processed in *Puta*, This UGK II was collected, triturated in mortar and pestle. Then it was sieved with mesh size no. 80 than UGK II was filled in air tight container and stored in dry place. It was observed that product from each batch followed with organoleptic parameters and tests described to ascertain quality of *Bhasma*. In the classical text *Raskamdhenu* it is mention to advocate UGK II with equal quantity of Sarshap powder as adjuvant drug with help of Goghruta. Sharshap was powdered and sieved with 80 mesh size. It was filled in air tight container and stored in dry place.

EXPERIMENTAL STUDY

Permission was obtained from the Institutional Animal Ethics Committee of BVDU Medical College. CPCSEA approved central animal house, Bharati Vidyapeeth University, Katraj, Dhankawadi Campus, Pune. Animals and species used for experiment were wistar rats and Albino mice. Animals were caged in Polypropylene rat cages with stainless steel grip top. Clean rice husk was used as bedding material. Polypropylene bottles with a stainless steel nozzle [300ml] was kept for drinking water. Envoirmental conditions of animal house was maintained at Maximum: 30°C, Minimum: 18°C, Mean relative humidity was approximately 50-60%. Room was cleaned every day and Bedding material and cages were changed twice in week. 60 gm per animals pellets were kept in fed tray everyday. The next day remaining food pellets were weighed to find out daily, food consumption by the animals. The time of filling the food tray was noted and kept constant throughout the study. Drinking water filtered through aqua guard water filter system was provided.

LEARNING AND MEMORY EFFECT

A. Conditional avoidance response in rats

Model: The apparatus described by cook and widely (1957) was used to study the efficacy of the drug on acquisition of learning and its retention in albino rats. The apparatus consisted of a sound proof experimental chamber with grid floor which could be electrified and with a provision of buzzer tone. A wooden pole, screwed onto the inner surface of the lid of the chamber acted as the shock-free zone. In assessment of nootropic activity, the stimulus provided was a foot shock of 5mA given for a period of 10s from the electrifiable grid floor.

Animal: Wistar rats (Male of 180-250 gm).

Drug:

1. Distilled water [Control group I].
2. *Goghruta* [Control group II].
3. Piracetam [standard group].
4. UGK II and equal quantity of Mustard powder (Brassica compestris) with *Goghruta* in Test group X, Test group 2X.

Groups: Animals were grouped randomly. (By stratified random sampling)

5 Groups were classified each group containing of 6 rats.

Animal identification

Animals were marked on head, back and tail using picric acid. Appropriate labels were attached to the cages indicating study number, test substance, group number, sex, and dose and cage number.

Instrument

Feeding needle, spatula, Cook's and widely apparatus.

Drug Dose

The therapeutic dose of UGK II is 1.5 gm in the formulation addition of equal quantity of Mustard powder (Brassica compestris) was advocated hence the final drug dose was 3gm[2] in human. This dose was extrapolated using extrapolating factor (E.F)

ISSN: 2456-3110 ORIGINAL ARTICLE Jan-Feb 2020

0.018 the dose of Test X UGK II was 0.054mg and the dose of Test 2X of UGK II was 0.135mg and administered to rats orally.

The therapeutic dose of Piracetam is 6gms[3] it was extrapolated with 0.018 (E.F)[4] the dose was 108 mg which was administered to rats orally.

The dose of *Goghruta* was 40 ml[5] it was extrapolated with 0.018(E.F)[4] and dose was administered to rats in 0.4 ml orally.

Procedure

Rats were initially trained to escape the foot shock by climbing on to the pole, i.e., the shock free zone. This screening was carried out by having three trails sessions interspersed with an interval of 10s. During each of the screening trails, the rats were allowed to acclimatize the apparatus for 10s. Then this was followed by the foot shock for 10s. Only those rats which were sensitive to the foot shock and could climb the pole were included in the study. The control drugs water and *Goghruta,* standard drug Piracitem and UGK II in 2 drug doses X and 2X with equal quantity of mustard powder (Brasicca compestris)with *Goghruta,* was administered to the animals for 7 days. To accesses the learning activity 10 trails session interspersed with an interval of 30s was held. During each trail, the rats were allowed to explore the apparatus for 10s, followed by a buzzer tone of 50 Hz (Conditioned stimulus) for 10s. This was followed by the foot shock of 1.5mA (unconditioned stimulus) for 10s. The animal learned to associate the buzzer tone with the impending foot shock and was capable of avoiding the foot shock on hearing the buzzer warning. Jumping onto the wooden pole before the shock period, constituted an avoidance response (AR) and jumping after giving shock constituted an escape response (ER). To accesses the memory activity 10 trails session interspersed with an interval of 30s was held. During each trail, the rats were allowed to explore the apparatus for 10 s, followed by a buzzer tone of 50 Hz (Conditioned stimulus) for 10s. This was followed by the foot shock of 1.5 mA (unconditioned stimulus) for 10s. In this animals were capable of avoiding the foot shock on hearing the buzzer warning. Maximum avoidance responses were noted.

Result and Analysis

Learning and Memory activity

Effect of UGK II in Condition avoidance response in rats by using cooks and widely apparatus: Analysis of data was structured by applying ANOVA test followed by tukey's test for comparison between all four groups. Mean difference (p value) is less than 0.05 i.e., 0.001 it specify that there is significant difference between the mean percentage responses with respect to type of treatment.

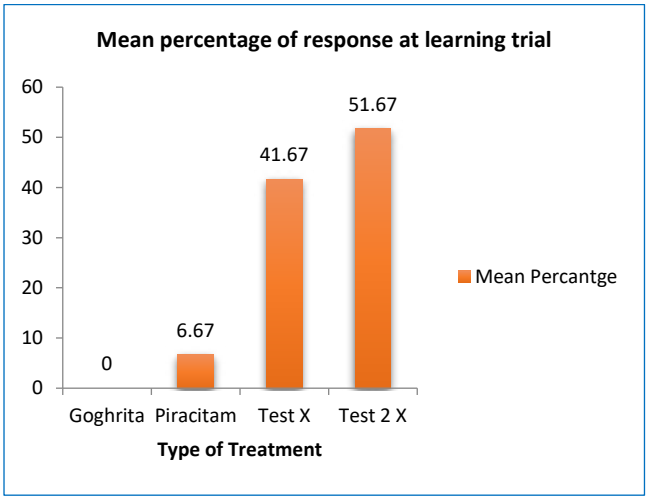
Table 1: Statistical Analysis of Learning Trails

Type of treatment	Number of animals	Percentage response (Mean ± SD)	95% Confidence Interval for Mean		p-value
			Lower Bound	Upper Bound	
Goghrut	6	0	0.00	0.00	< 0.001
Piracetam	6	6.67 ± 12.11	-6.04	19.38	
Test X	6	41.67 ± 16.02	24.85	58.48	
Test 2X	6	51.67 ± 7.52	43.77	59.57	

Table 2: p-Value table for pair wise comparison of treatment by using Tukey's test.

	Goghrut	Piracetam	Test X	Test 2X
Goghrut	-	*0.007**	*<0.001**	*<0.001**
Piracetam		-	*<0.001**	*<0.001**
Test X			-	*0.393*
Test 2X				-

ISSN: 2456-3110 **ORIGINAL ARTICLE** Jan-Feb 2020



UGK II in Test X and 2X dose when judge with control group (*Goghruta*) it illustrate that it has extremely significant learning activity than control group (P value 0.001 and 0.001). Standard drug (piracitem) when judge with control group it also illustrate extremely significant learning activity (p value 0.007).

UGK II in Test X and 2X dose when judge with Standard group (Piracitem) it illustrate that it has extremely significant learning activity than Standard group (Piracitem). (p value 0.001 and 0.001)

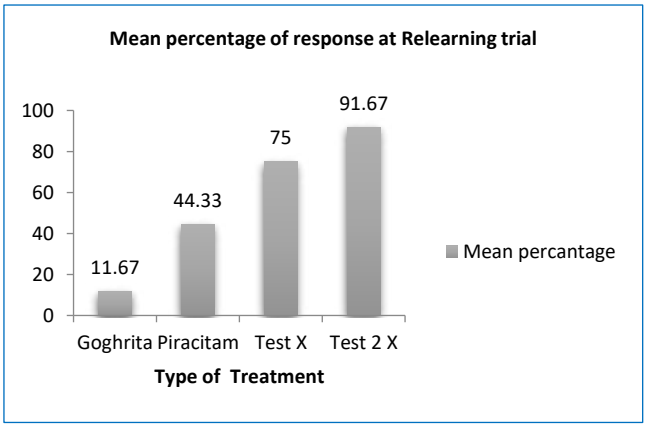
Table 3: Statistical Analysis of Relearning Trails

Type of treatment	Number of animals	Percentage response (Mean ± SD)	95% Confidence Interval for Mean		p-value
			Lower Bound	Upper Bound	
Water	6	11.67 ± 11.69	-0.60	23.94	< 0.001
Piracetam	6	43.33 ± 33.86	7.80	78.87	
Test X	6	75.00 ± 24.29	49.51	100.49	
Test 2X	6	91.67 ± 7.52	83.77	99.57	

Analysis of data was structured by applying ANOVA test followed by tukey's test for comparison between all four groups. Mean difference (P value) is less than 0.05 i.e., 0.001 it specify that there is significant difference between the mean percentage responses with respect to type of treatment.

Table 4: p-Value table for pair wise comparison of treatment by using Tukey's test.

	Goghrut	Piracetam	Test X	Test 2X
Water	-	0.001*	*<0.001**	*<0.001**
Piracetam		-	0.004*	0.006*
Test X			-	0.565
Test 2X				-



UGK II in Test X and 2X dose when judge with control group (*Goghruta*) it illustrate that it is extremely significant Relearning activity than control group. (P value 0.001 and 0.001). Standard drug (piracitem) when judge with control group it also illustrate extremely significant Relearning activity (p value 0.001)

UGK II in Test X and 2X dose when judge with Standard group (Piracitem) it illustrate that it has extremely significant Relearning activity than Standard group (Piracitem). (p value 0.004 and 0.006)

CONCLUSION

Manufacturing and Authentication process of UGK II was standardized. Learning and Relearning (Memory) activity UGK II illustrate highly significant effect in comparison with control and standard drug in Conditional avoidance response in rats. Hence it is

ISSN: 2456-3110 **ORIGINAL ARTICLE** Jan-Feb 2020

concluded that UGK II has highly significant Learning memory activity which established the study.

REFERENCES

1. Internet mental health 1995-2008 Philip.w. long MD.
2. Acharya Sri G.Sharma Mishra, Vaidya S. K. Sharma, RasaKamadhenu, Unmad NidanChikitsa 9/12, Fourth-Chikitsapada, Edition-3, Chaukhambha Orientalia, Varanasi 2007.
3. www.nverbendds.org/piracetam.html.
4. Ghosh M. N., fundamentals of Experimental PHarmacology; 3rd Ed; Hilton and Company Kolkatta, 2005. Chapter 30, pages 190-197.
5. Sharangdhar samhita, ed.acharya shri radhakrishna parashar. Shri vaidyanatha ayurveda bhavan limit Nagpur 3rd ed march 1984, Chapter 9, verse 1.

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