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EFFECT OF FORCED SWIM STRESS ON WISTAR ALBINO RATS IN VARIOUS BEHAVIORAL PARAMETERS

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ABSTRACT

Stress is an important factor of depression that causes the changes in various body systems. The forced swim test is a commonly used stressor test where rats are forced to swim in specially constructed tanks for a particular period where there is behavioral activation characterized by vigorous swimming and diving to search for alternate routes of escape. Animal health including human has been shown to be affected by the stressful events of the life inducing situation which alters cognition, learning memory and emotional responses, causing mental disorders like depression and anxiety and stress in rats. **Methods:** The experiment was carried out with 12 healthy albino Wistar female rats weighing about 150-180gms. The animals were randomly divided into two groups of six animals each. Group – I (control), Group – II (Stressed Group). Group –II rats are placed in plastic tanks for 45minutes for 15 days. Temperature of water was maintained at 20°C. **Results:** Forced swim stress causes to a significant change ($p < 0.05$) on cognitive functions: motivation, learning and memory. Forced swim stress is the factor damaging the hippocampus causes repeated immobilization and produce atrophy of dendrites of pyramidal neurons and neuroendocrinological disturbances, controlled by the hypothalamus-pituitary-adrenal axis (HPA). Repeated stress in the form of forced swimming activates the free radical processes leading to an increase in lipid peroxidation in many tissues. **Conclusion:** This study reveals the effect of repeated forced swim stress causes a wide range of adaptive changes in the central nervous system including the elevation of serotonin (5-HT) metabolism and an increased susceptibility to affective disorders.

Keywords limit 4-6

Keywords: Forced swim stress, Cognition, Behavioral changes, Open field apparatus

INTRODUCTION

Stressful situations induce physiological and behavioral changes in homeostasis. Exposure to stressful situations is among the most common response to stressors, a series of behavioral, neuro chemical, and physiological changes ought to serve in an adaptive capacity.^[1] Swimming in small laboratory animals has been widely used for studying the physiological changes and the capacity of the organism in response to stress.^[2] Swimming is not always a simple exercise stressor and can be eliminated.^[3] The forced swimming stress developed an accepted model for studying physical stress in animals in forced swimming test. By varying the water temperature, animals can survive as long as 80 hours in lukewarm water (36° C). Increasing or decreasing the water temperature

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above or below this point influences the overall behavior of the animal and changes the involvement of glucocorticoids.^[4]

MATERIALS AND METHODS

Materials and Methods: Animal model: Adult female Wistar rats weighing between 150-250 g were divided into two groups as Control (n =12) and Stress (n =12). All the rats were given standard rat chow and tap water ad libitum and were housed at 25 ± 2 o C on a 12-hour dark/light cycle. All the experimental procedures were approved by the IAEC; adequate measures were taken to minimize pain or discomfort.

RESULTS

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Table: 1. Effect of stress on various Behavioral Parameters in open filed apparatus

Paramete	Control group	Stress group
Central ambulation	S40	9:1:1
Rearing	S80	9:1:1
Grooming	ST 80	9:1:2:1

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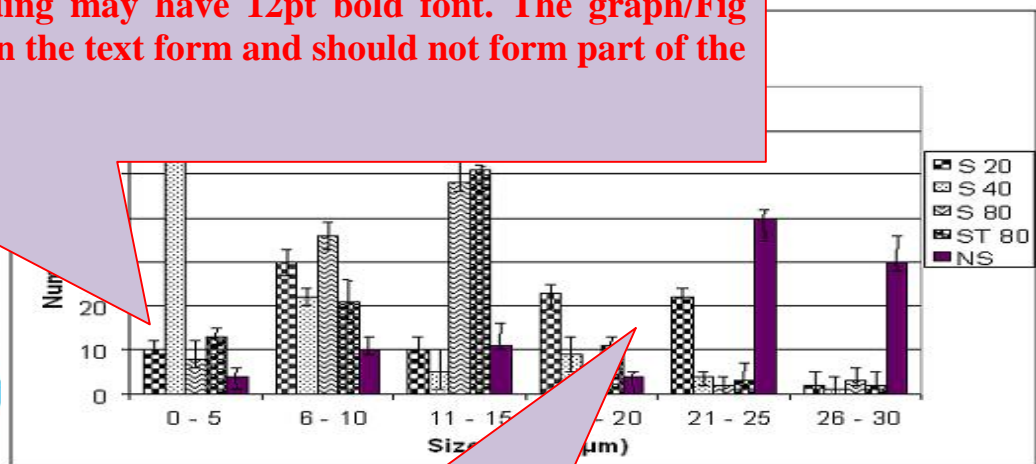


Fig. 1: Effect of stress on various Behavioral Parameters in open filed apparatus

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DISCUSSION

The result of particle size distribution shows that S 40 surfactant was efficient enough to achieve more amounts of less particle sized liposomes within the size range of 0 – 5 micron which was superior to S80 surfactant.^[5] The liposomes in the absence of surfactant fails to achieve smaller size distribution on comparing to others and this proves that the emulsification using surfactant during the preparation is needed to achieve maximum reduction in the liposomal size and this reduced size has more potential in extravasating the blood capillaries towards targeting vital sites. Non surfactant modified liposomes mostly would form large unilamellar vesicles. Most of all the formulation showed an average population in the size range of 6 – 10 micron which proved to be the stable size in this manufacturing technique. The ST80 formulation showed a maximum population in the size range of 11 – 15 micron but falls down on either side proves that this formulation favors stability in this size range.^[6]

CONCLUSION

Thus the liposomes if modified with a concentration of 2:1 could be a good carrier for most of the neuro implants or any other painful procedures. Validating and standardizing this

REFERENCES

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For journal reference

Greenen D, Buttrick P, Scheuer J. Cardiovascular and hormonal responses to swimming and running in the rat. J Appl Physiol.1988; 65: 116-22

For Book reference

HL Lee. Behaviour of animal. Lippincott Williams's publisher. 1994; 2nd Edn, Vol 29555 – 61.

For Chapters in book reference

Meltzer, Kallioniemi, and Trent JM. Chromosome alterations in human solid tumors. In: B. Vogelstein, and K.W. Kinzler (eds.), The Genetic Basis of Human Cancer, McGraw-Hill, New York,2002,pp.93-98