Effect of 'Geriforte' a Herbal Compound Drug on Anoxic Stress Tolerance in Animals

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INTRODUCTION
Geriforte was first described to possess antistress properties by Singh et al., in 1978. Later on Geriforte was found to possess antitumour and antiviral properties in experimental animals (Singh et al., 1980, Singh et al., 1981). Furthermore, it was found that during stress the drug was capable of increasing succinate dehydrogenase (SDH) in the brain. This enzyme is responsible for utilisation and conservation of energy in the cellular system of the organism, which helps adaptive processes during stress (Ahmed et al., 1983).

However, the effect of 'Geriforte' was not studied in anoxic stress; hence in the present study, this was evaluated by the anoxic stress tolerance test in experimental animals.

MATERIALS AND METHODS
Hermetic glass vessels of 1 litre air capacity were used in this study. Each vessel was blackened completely except for a small area, which was used as an observation window. These vessels could be made air-tight at the start of the experiments. Mice of the same age and of equal weight were used in these experiments. Each mouse served as its own control.

Four groups of 20 mice each were used. 'Geriforte' powder provided by The Himalaya Drug Co., suspended in normal saline was given orally to animals by a feeding cannula in doses of 25, 50 and 100 mg/kg p.o. in groups II, III and IV respectively. Group I received only saline and served as a parallel control.

Each animal was kept in the hermetic vessel and time was noted by a stopwatch. The moment the animal showed the first convulsion it was immediately removed from the vessel and resuscitated if needed. The time duration from the entry of the animal in the hermetic vessels to the appearance of the first convulsion was taken as time of 'Anoxic Tolerance'. The appearance of convulsion was a very sharp end-point as delay of even 1 minute in removal of the animals killed them.

First observations were made with each animal of each different group and 'Anoxia Tolerance' time duration noted. These animals were then treated with different doses of 'Geriforte' as described earlier and were exposed to 'Anoxic Stress' after one, two and three weeks of drug treatment and the time duration of anoxia tolerance was noted.
RESULTS
The results of this study are summarised in Table 1. 'Geriforte' treatment enhanced the duration of anoxic tolerance in all the dosages used. The effect increased with the duration of treatment, i.e., it was maximum at the end of three weeks. The effect was not dose dependent, as 50 mg/kg p.o. dose was almost as effective as 100 mg/kg orally and the lowest dose of 25 mg/kg p.o. could also produce a significant and similar effect.

<table>
<thead>
<tr>
<th>Drug (mg/kg p.o.)</th>
<th>Mean duration of tolerance in minutes ± SE</th>
<th>Control</th>
<th>After treatment lasting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 week</td>
<td>2 weeks</td>
</tr>
<tr>
<td>1. Saline (1 ml)</td>
<td>160 ± 3.1</td>
<td>163 ± 4.1</td>
<td>158 ± 2.8</td>
</tr>
<tr>
<td>2. Geriforte (25)</td>
<td>154 ± 2.6</td>
<td>171 ± 3.8</td>
<td>182 ± 4.2</td>
</tr>
<tr>
<td>3. Geriforte (50)</td>
<td>158 ± 3.2</td>
<td>174 ± 5.1</td>
<td>181 ± 4.4</td>
</tr>
<tr>
<td>4. Geriforte (100)</td>
<td>159 ± 3.6</td>
<td>173 ± 2.7</td>
<td>184 ± 2.8</td>
</tr>
</tbody>
</table>

*p > 0.05; **p < 0.001

DISCUSSION
In an earlier study, 'Geriforte' increased survival during swimming stress and prevented stress ulcers. However, its capability to antagonise 'Anoxic Stress' was not evaluated previously.

Anoxia is a very severe stressor. All the body functions including cellular respiration depend on oxygen supply to them. Any lack of this vital element will play havoc on all body mechanisms and increase in adaptation during this stress by any drug could be considered as its major antistress effect.

One of the plant ingredients of Geriforte, *Withania somnifera* (Ashwagandha) has been fully worked out for its antistress activities (Singh *et al.*, 1982), which in part may be responsible for the antistress effect of 'Geriforte'.

How a number of plant drug combinations with hundreds of chemical constituents, produce such significant effects in experimental animals appears to be incredible from the modern pharmacological standpoint. However, the effects are true, as they are consistently observed in a battery of animal tests and cannot be a placebo effect.

The possible activities could be explained by the naturalness of plant materials to body systems. Their acceptability and bio-availability is greater than unnatural synthetic drugs to which the human system has been exposed during the last few decades only.

Thus compound Ayurvedic herbal drugs like 'Geriforte' appear to have some scientific basis for their effects, and considering their innocuous nature and the serious toxic effects of modern synthetic drugs, one could presume that the application of 'Geriforte' would be a potentially useful drug in many 'stress disorders’, viz. premature ageing, fatigue, insomnia, diabetes, hypertension, behavioural disorders, bronchial asthma, myocardial infarction etc.
Many reports of clinical studies with 'Geriforte' in this country provide proof to our contention (Kumar et al., 1982).

**SUMMARY**

'Geriforte', a herbal compound drug, has been reported to possess antistress, antitumour and antiviral activities.

In this study its effect on a very severe kind of stress produced by 'Anoxia stressor' was studied.

Geriforte treatment for 1, 2 and 3 weeks produced a significant ($p<0.001$) increase in the 'Anoxia Tolerance' of mice in the Anoxic-stress test.

This property of Geriforte further indicates its clinical use in a variety of stress disorders.

**REFERENCES**


