RESERPINE INDUCED MIOSIS

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Reserpine, on systemic administration (1) as well as after intracerebroventricular injection (2), exerts parasympathomimetic effects such as miosis, salivation, and diarrhoea. These effects have been attributed to increased central parasympathetic activity since reserpine increases the acetylcholine contents of the hypothalamus (3). A direct parasympathomimetic action of reserpine has been excluded by Beckman (4). However these observations do not exclude the possibility of a peripheral component of action in the reserpine induced miosis. Therefore, it was planned to study the effect of topical application of reserpine on the pupillary size in rabbits.

Four adult albino rabbits of either sex weighing from 1.0 to 1.4 kg were employed in the present study. The drug was applied topically as 0.10 ointment in one eye while in the other eye (control eye) only vaseline was applied. The ointment was applied daily for seven days and the pupillary size was measured each day before the application of the drug. Pupillary size was measured according to the method of Chen and Way (5) suitably modified by providing gradually increasing sized apertures instead of the black dots. The pupil was continuously observed for one minute through the appropriate aperture of the pupillometer kept at a constant distance from the rabbit eye and the diameter noted.

<table>
<thead>
<tr>
<th>Number of rabbits</th>
<th>Average diameter of rabbit pupil ± S.E. in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control eye</td>
</tr>
<tr>
<td></td>
<td>Treated eye</td>
</tr>
<tr>
<td>4</td>
<td>7.38 ± 0.21</td>
</tr>
<tr>
<td></td>
<td>5.90 ± 0.12</td>
</tr>
</tbody>
</table>

S.E.: Standard error

REFERENCE


PERIPHERAL COMPONENT IN RESERPINE INDUCED MIOSIS

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Table 1. Effect of topical application of reserpine on pupillary diameter.

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The results of this study are summarized in Table 1. It is evident that in the reserpine treated eye, the average pupillary diameter was 5.90 ± 0.12 mm as compared to the control eye (7.38 ± 0.21 mm). Absence of any change in the pupillary size of the control eye in all these rabbits rules out the possibility of central or systemic action. Conjunctival or corneal irritation can be excluded since there was no lacrimation or redness of the conjunctiva upon local application of reserpine. The mechanism of the local miotic action of reserpine is open to speculation. Reserpine has been shown to decrease the catecholamine contents of the iris (6). It could be that depletion of catecholamines by reserpine may lead to sympathetic inactivity and this may be responsible for the parasympathetic preponderance. The relative importance of the peripheral action of reserpine in comparison to the centrally induced miosis by systemic administration of reserpine cannot be stated.

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REFERENCES

ACCUMULATION OF DIGITOXIN BY THE HEART AND “THE CUMULATIVE EFFECT OF DIGITALIS”

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There exists a considerable literature (1-4) on “the cumulative effect of digitalis”, but the mechanism involved in the appearance of “the cumulative effect” is still a matter of speculation. The present work was designed to know whether “the cumulative effect of digitalis” occurs as a result of the real accumulation of digitalis or is due to digitalis-induced change in the heart tissue. Experiment was carried out with cats and guinea pigs. At various times after a single intravenous injection of 0.132 mg/kg digitoxin in cats or of 0.750 mg/kg digitoxin in guinea pigs, the following observations were made; 1) determination of lethal dose of digitoxin by Hatcher’s method, 2) measurement of glycosides (digitoxin and its metabolites) content in the heart by Repke’s method (5), 3) patho-histological examination of the heart tissue.

The lethal dose of digitoxin in cats decreased markedly 24 hours after the administration of the drug, reaching the half of the control value 48 hours later. The significant decrease in the lethal dose was still recognized about 10 days after the drug administration. Thus, it can be said that, in cats, the cumulative effect of digitoxin is quite remarkable. In guinea pigs, however, “the cumulative effect of digitoxin” could