Drugs affecting the eye

Drugs to be tested;

1- Pilocarpine
2- atropine
3- phenylephrin
4- lidocain

**Aim of experiment**

To demonstrate the effect of these drugs on the eye of experimental animal including;

1- pupil size
2- reflex of the eye to light beam (accommodation)
3- blood vessels of conjunctiva
4- corneal reflex

**Brief anatomy of the eye**

Eye is a good example of an organ with multiple autonomic nervous system function, controlled by several autonomic receptors. The anterior chamber is the site of several tissues controlled by the autonomic nervous system, these tissues include three different muscles (pupillary dilator muscle and circular constrictor muscles in the iris and the ciliary muscle) and the secretory epithelium of the ciliary body.

Muscarinic cholinomimetic drugs (like pilocarpine) mediate contraction of the constrictor muscles that cause miosis and contraction of the ciliary muscle.

While alpha adrenoceptors agonist drugs (like phenylephrine) mediate contraction of the radial dilator muscles and result in mydriasis or increase pupil size.

While muscarinic blocking drugs (like atropine) causes paralysis of the circular constrictor muscles (relaxation or mydriases), and also causes paralysis of ciliary muscle and causes cycloplegia or loss of accommodation.
While local anesthetic drugs (like lidocaine) produce no effects on the eye except produce local anesthesia (loss of corneal reflex).

**Results**

<table>
<thead>
<tr>
<th>drug</th>
<th>Pupil size</th>
<th>Light reflex</th>
<th>Blood vessels</th>
<th>Corneal reflex</th>
</tr>
</thead>
<tbody>
<tr>
<td>pilocarpine</td>
<td>miosis</td>
<td>present</td>
<td>normal</td>
<td>present</td>
</tr>
<tr>
<td>atropine</td>
<td>mydriasis</td>
<td>Lost(cycloplegia)</td>
<td>congested</td>
<td>present</td>
</tr>
<tr>
<td>phenylephrin</td>
<td>mydriasis</td>
<td>present</td>
<td>constriction</td>
<td>present</td>
</tr>
<tr>
<td>lidocain</td>
<td>Not affected</td>
<td>Not affected</td>
<td>Not affected</td>
<td>absent</td>
</tr>
</tbody>
</table>