Preliminary clinical study on the efficacy of propolis/aloevera/chamomile compounded natural eye drops

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Abstract
A preliminary clinical study on the efficacy of propolis/aloevera/chamomile (PAC) eye drops was conducted on 8 dogs and 2 cats affected by ocular surface disorders (OSD) non responsive to previous treatments. It was possible to apply the complete study protocol to 6 cases and clinical signs of ocular pain and discomfort were not more present at the rechecks. In one cat the study protocol was completed but clinical signs didn’t improve. The treatment was discontinued by the owners in 1 cat and 2 dogs. In 2 cases an improvement was reported. In all cases with a positive outcome tear osmolarity values were lower at the recheck. Nonetheless, the significance of tear film osmolarity in dogs and cats is questionable (1, 2) and there are differences with human studies. Moreover, there are no published data to compare the instrument used in our study (i.pen®vet) and what has been used in literature (1, 2).

Introduction
The use of natural eye drops in the treatment of pets ocular surface inflammatory processes is frequently based on owners’ belief, conventional wisdom and common sense. The prescription of natural compounded eye drops should be based on scientific proof of efficacy.

Purpose
To state the effects of PAC compounded eye drops in the treatment of OSD.

Material
The propolis/aloevera/chamomile compounded eye drops were provided by Dioptrix (Vizovost, Origmed, Lithuania/Dioptrix France). Osmolarity was checked by i.pen®vet and i.pen®vet sensors (i-med Canada). Ocular surface and meibomian glands examination was performed with OSA-Vet, Tearvet A and MGA-Vet (SBM Sistemi, Italy).

Inclusion criteria
Dogs and cats of different breeds, sex, age, with clinical signs of inflammation due to evaporative dislacrimia or hypolacrimia, recurrent conjunctivitis, keratoconjunctivitis, corneal erosion non responsive to previous treatments.

Clinical protocol and exams
Complete eye examination followed by OS specific tests selected case by case according to the animal behaviour. Tear film (TF) quantitative tests (Schirmer tear test and meniscometry). TF quantitative tests (Schirmer tear test and meniscometry).

Results (Tab. 1)
The behavioural signs of scratching and blinking disappeared in 6 rechecked animals (cases 1-6) with return to a normal animal behaviour and owners’ satisfaction. In cases 7 and 8 improvement was reported by the owners but they didn’t bring back their animals for a recheck. The cat (7) because the clinical signs disappeared, the dog (8) because an emerging neurological disorder became a more important health priority. In case 9 clinical signs didn’t improve and osmolarity increased. In case 10 after a temporary improvement the dog showed evident pain at the instillation of the drops and treatment was discontinued.

Tab. 1

<table>
<thead>
<tr>
<th>Tab. 1</th>
<th>Animal</th>
<th>KCS</th>
<th>STT1</th>
<th>STT2</th>
<th>OBT</th>
<th>OAT</th>
<th>REE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poodle F 4,5yo</td>
<td>KCS</td>
<td>R 4 / L 4</td>
<td>R 4 / L 4</td>
<td>R 325 / L 337</td>
<td>R 317 / L 366</td>
<td>R 345 / L 348</td>
<td></td>
</tr>
<tr>
<td>2. Cavalier King CS M 7yo</td>
<td>MSD/EDE</td>
<td>R 14 / L 14</td>
<td>R 11 / L 14</td>
<td>R 353 / L 354</td>
<td>R 340 / L 299</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Bobtail F 3yo</td>
<td>MGD/EDE</td>
<td>R 19 / L 29</td>
<td>R 24 / L 24</td>
<td>R 356 / L 370</td>
<td>R 296 / L 289</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Crossbreed F 5yo</td>
<td>CC/WE</td>
<td>R 20 / L 20</td>
<td>R 20 / L 20</td>
<td>R 370 / L 361</td>
<td>R 314 / L 284</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Poodle F 3yo</td>
<td>WE/MGD</td>
<td>R 24 / L 24</td>
<td>R 20 / L 20</td>
<td>R 370 / L 361</td>
<td>R 314 / L 284</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Persian cat M 8yo</td>
<td>CC/WE</td>
<td>R 20 / L 18</td>
<td>NR OPR</td>
<td>R 305 / L 339</td>
<td>NR OPR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. English Bulldog M 7yo</td>
<td>MSD/EDE</td>
<td>R 22 / L 13</td>
<td>NR OPR</td>
<td>R 351 / L 347</td>
<td>NR OPR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Siberian cat M 2,5yo</td>
<td>WE/sg</td>
<td>R 28 / L 24</td>
<td>R 26 / L 27</td>
<td>R 347 / L 302</td>
<td>R 348 / L 350</td>
<td></td>
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</tr>
<tr>
<td>10. JRT F 6,5yo</td>
<td>EDE R</td>
<td>&gt;20</td>
<td>&gt;20</td>
<td>R 314</td>
<td>NR OPR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Among the data collected, osmolarity tested by i.pen®vet was the main parameter that changed after the treatment with PAC eye drops. In humans tear film hyperosmolarity has been associated both to EDE or decreased tear secretion. (3) A link was reported between hyperosmolarity and tear instability. (4) Hyperosmolality can induce epithelial cell apoptosis. (5) Tear osmolarity has been demonstrated to have the highest correlation with disease severity of clinical DED tests (6) and has been frequently reported as the single best metric to diagnose and classify DED. (7, 8)

Discussion
In dogs tear osmolarity has high variability and poor-to-moderate repeatability and reproducibility (1). In cats tear film osmolarity doesn’t change in eyes affected by conjunctivitis. (2) All animals recruited in the present study were examined by the author in the same environmental conditions to decrease variables. In the KCS dog (case 1) TF osmolarity decreased, quite the opposite of what described in literature (1). The same happened to the other animals, affected by MGD and/or OS epithelial defects, potential causes of EDE.

Conclusion
Due to the positive effects observed at the rechecks and confirmed by the owners of the animals recruited in this study and the absence of contraindications, propolis/aloevera/chamomile compounded eye drops may be considered as a good choice for the treatment of ocular surface disorders causing clinical signs of pain and discomfort when more specific treatments are not advisable.

References
2. Davis K, Townsend W. Tear film osmolarity in normal cats and dogs with conjunctivitis. Veterinary Ophthalmology, 14, Supplement 1, 54-59, 2011