Preliminary clinical study on the efficacy of propolis/aloe vera/chamomile compounded natural eye drops*

Claudio Peruccio

Ophthalmology Referrals, Turin Veterinary Centre, Torino, Italy

Abstract

A preliminary clinical study on the efficacy of propolis/aloe vera/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 no 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/aloe vera/chamomile compounded eye drops were provided by Dioptrix (Vizoovet*, Origmed, Lituania/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, kerato-conjunctivitis, 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 qualitative exams (osmolarity, interferometry, meibography). OS stains (fluorescein and rose bengal). To all recruited animals only PAC eye drops were administered for 15-20 days before the first recheck.

Caseload (Fig. 1-10)

1. Poodle, female, 4,5 yo. Long lasting KCS non responsive to conventional treatments
2. Cavalier King CS, male, 7 yo. Evaporative dry eye (EDE), meibomian gland dysfunction (MGD)
3. Bobtail, female, 8 yo. EDE, MGD
4. Border Collie, female, 6 yo. Chronic conjunctivitis and keratitis with epithelial defects
5. Crossbreed, female, 9 yo. Chronic conjunctivitis, wet eye
6. Poodle, female, 5 yo. Chronic conjunctivitis, wet eye, MGD, EDE
7. Persian cat, male, 8 yo. Chronic conjunctivitis, chemosis, wet eye
8. English Bulldog, male, 7 yo. MGD, EDE, wet right eye
9. Siberian cat, male, 2,5 yo. Wet eyes, history of herpetic keratoconjunctivitis
10. Jack Russel Terrier, female, 8,5 yo. Recurrent corneal epithelial erosion

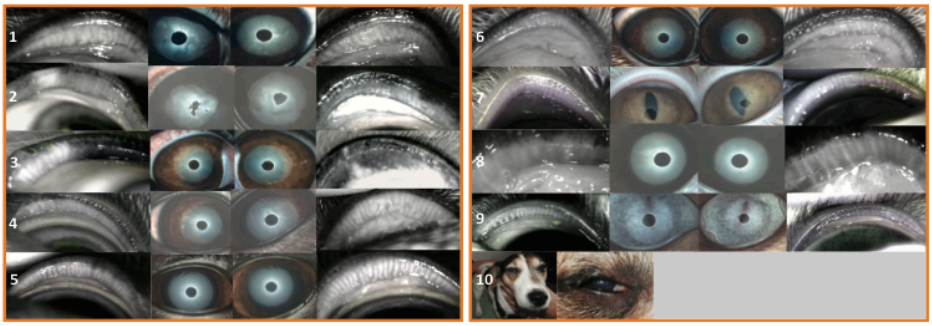
Results (Tab. 1)

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 an 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

Animal	Diagnosis	STTBT	STTAT	OBT	OAT
1.Poodle F 4,5yo	KCS	R 1 / L 1	R 4 / L 1	R 325 / L 337	R 311 / L 306
2.Cavalier King CS M 7yo	MGD/EDE	R 14 / L 14	R 11 / L 14	R 371 / L 366	R 345 / L 348
3.Bobtail F 8yo	MGD/EDE	R 19 / L 29	R 24 / L 24	R 353 / L 354	R 340 / L 299
4.Border C F 6yo	CC/K/EDE	R 25 / L 25	R 24 / L 29	R 366 / L 370	R 296 / L 289
5.Crossbreed F 9yo	CC/WE	R 20 / L 20	R 20 / L 20	R 367 / L 359	R 295 / L 296
6.Poodle F 5yo	WE/MGD	R24 / L 24	R 20 / L 28	R 370 / L 361	R 314 / L 284
7.Persian cat M 8yo	CC/WE	R 20 / L 18	NR OPR	R 305 / L 339	NR OPR
8.English Bulldog M 7yo	MGD/EDE	R 22 / L 13	NR OPR	R 351 / L 347	NR OPR
9.Siberian cat M 2,5yo	WE / HHKC	R 28 / L 24	R 26 / L 27	R 347 / L 302	R 345 / L 350
10.JRT F 8,5yo	REE R	R >20	R >20	R 314	R 356

F Female – M Male – YO Years Old – R Right – L Left – KCS Kerato Conjunctivitis Sicca – MGD Meibomian Gland Dysfunction - EDE Evaporative Dry Eye – CC Chronic Conjunctivitis – K Keratitis – WE Wet Eyes – STTBT Schirmer Tear Test Before Treatment - STTAT Schirmer Tear Test After Treatment - OBT Osmolarity before treatment - OAT Osmolarity after treatment – REE Recurrent Epithelial Erosion – NR No Recheck – OPR Owner called to report Positive Result (but no way to control parameters) – HHKC History of Herpetic Kerato Conjunctivitis



Discussion

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) Hyperosmolarity 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)
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.
Further studies on a higher number of animals and osmolarity comparative tests carried out with the instruments used in published peer-reviewed articles are needed.

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/aloe vera/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

1. Sebbag L et al. Assessment of tear film osmolarity using the TearLabTM osmometer in normal dogs and dogs with keratoconjunctivitis sicca. Veterinary Ophthalmology 20, 4, 357-364, 2017
2. Davis K, Townsend W. Tear-film osmolarity in normal cats and cats with conjunctivitis. Veterinary Ophthalmology, 14, Supplement 1, 54-59, 2011
3. Barabino S et al. Tear film and ocular surface tests in animal models of dry eye: uses and limitations. Exp Eye Res 79, 613-624, 2004
4. Liu H et al. A link between tear instability and hyperosmolarity in dry eye. Invest Ophthalmol Vis Sci 50, 3671-3679, 2009
5. Jackson DC et al. Tear interferon-gamma as a biomarker for evaporative dry eye disease. Invest Ophthalmol Vis Sci 57, 4824-4830, 2016
6. Sullivan BD et al. Tear film osmolarity: determination of a referent for dry eye diagnosis. Invest Ophthalmol Vis Sci 47, 4309-4315, 2010
7. Lemp MA et al. Tear osmolarity in the diagnosis and management of dry eye disease. Am J Ophthalmol 151, 792-798, 2011
8. Wolffsohn JS et al. Diagnostic methodology report. The ocular surface 15, 539-574, 2017