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A PURIFIED EXTRACT FROM BROWN TRUFFLES OF THE SPECIES *TERFEZIA CLAVERYI CHATIN* - ALTERNATIVE THERAPY IN DOG AND CAT GLAUCOMA

EXTRACTUL PURIFICAT DE TRUFE BRUNE *TERFEZIA CLAVERYI CHATIN* – TRATAMENT ALTERNATIV IN GLAUCOM LA CÂINE ŞI PISICĂ

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ABSTRACT | REZUMAT

A purified aqueous extract of *Terfezia claveryi Chatin* brown truffles was obtained by water extraction, concentration and purification by ultrafiltration.

The concentrated extract (Truffle Eye Drops), was tested in the Faculty of Veterinary Medicine of Bucharest, Romania, over a period of four months (June – September, 2015) in 46 patients with glaucoma (32 dogs and 14 cats).

The study showed that the concentrated extract (Truffle Eye Drops) reduces the intraocular pressure (IOP) in glaucomatous eyes comparatively to classical therapy.

Keywords: *Terfezia claveryi Chatin*, Truffle Eye Drops, glaucoma

Extractul purificat din trufe brune *Terfezia claveryi Chatin* a fost obținut prin extracție apoasă, concentrare și purificare prin ultrafiltrare.

Extractul concentrat (Colirul cu trufe) a fost testat în cadrul Facultății de Medicină Veterinară din București pe o perioadă de 4 luni (iunie – septembrie 2015) pe un lot de 46 de pacienți cu glaucom (32 de câini și 14 pisici).

Studiul a demonstrat că extractul concentrat (Colirul cu trufe) reduce presiunea intraoculară (PIO) în glaucom comparativ cu medicația clasică.

Cuvinte cheie: *Terfezia claveryi Chatin*, Colir cu trufe, glaucom

Desert truffles (Fig. 1) are a rich source of protein, amino acids, fatty acids, minerals and carbohydrates (1, 2, 3, 4). Like other fungi, desert truffles comprise a vast and yet largely unexploited source of new pharmaceutical products. When searching for new therapeutic alternatives in modern medicine, truffles are considered a large source of therapeutic compounds with anti-inflammatory, immunosuppressor, antimutagenic, anticarcinogenic (6, 8), antioxidant properties (10), and antimicrobial properties (5, 6, 7).

Truffle Eye Drops are extracted from the brown desert truffle of the orient. It is a natural product containing polypeptides with a mass ranging between 300 and 420 Da, amino acids (alanine, serine, proline, methionine and tyrosine), carbohydrates (glucose), minerals (residue at calcination) and metals (sodium, potassium, magnesium, manganese, cobalt, arsenic, selenium, cadmium, lead, chrome, iron, copper and zinc).

Fig. 1. Desert truffle

MATERIALS AND METHODS

Truffle Eye Drops, was tested in the Faculty of Veterinary Medicine of Bucharest, Romania, over a period of four months (June – September, 2015).

All patients included in the study, diagnosed with glaucoma, were previously treated using antiglaucoma

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drops without any results. All the patients were candidates for surgery (endoscleral prosthesis or enucleations of the ocular globe) due to high intraocular pressure and painful eye. The owners agreed to the treatment for glaucoma using Truffle Eye Drops.

The testing group includes 46 patients (32 dogs and 14 cats) with glaucoma diagnosed using ophthalmology examination, tonometry (Fig. 2) and ocular ultrasound (9). The mean age of the dogs was 7.6 years old, ranging from 4 months to 15 years old, of the following breeds: Pekingese, Bichon, Poodle, English Bulldog, Pug, Shar Pei, Labrador, Husky, Rottweiler, French Bulldog, Shih Tzu, Caucasian Shepherd and Crossbreed. The age of cats varied between 6 months and 13 years old (Domestic Short Haired, Burmese and Russian Blue). The 32 dogs included in that study were diagnosed with congenital glaucoma, glaucoma secondary to posterior lens luxation, glaucoma secondary to intumescent cataract and glaucoma secondary to cataract surgery.

Fig. **2**. Glaucoma secondary to intumescent cataract (Pekingese, 5 years old)

The 14 cats included in the study cats were diagnosed with glaucoma secondary to posterior lens luxation and glaucoma secondary to intracapsular lens extraction. Eye drops were well tolerated by most of the patients chosen for the study and throughout the test period, the eye drops were kept in a refrigerator. The patients were receiving the Truffle Eye drops 3 times a day for 4 months in glaucoma (Fig. 3) and patients were reassessed weekly.

RESULTS AND DISCUSSIONS

Truffle Eye Drops was well tolerated by the patients. Three patients (two dogs and one cat) shown signs of intolerance (itching, blepharospasm, epiphora and conjunctival vasodilation) from the first administration of the eye drops.

Fig. **3**. Glaucoma secondary to intumescent cataract (Pekingese, 5 years old)

The dogs with congenital glaucoma, glaucoma secondary to posterior lens luxation and glaucoma secondary to intumescent cataract, presented with ocular pain, corneal oedema, presence of Haab's striae in the cornea, vasodilation of episcleral blood vessels, mydriasis, delayed pupillary chromatic light reflex and intraocular pressure (IOP) values between 34-82 mm Hg. The intraocular pressure decreased at 18-25 mm Hg, and remained at these values from the first week of treatment. After the first week of treatment, the eye drops were administered 3 times per day, throughout the entire period of study (4 months).

In two cases (Pekingese and Caniche), the IOP values have remained consistently high and the owners have chosen intraocular silicone prosthetic surgery.

Cats diagnosed with glaucoma secondary to posterior lens luxation, glaucoma secondary to intracapsular lens extraction, had high IOP values, between 42 mmHg and 90 mmHg, ocular pain, corneal edema, evident corneal Haab's striae and vasodilation of episcleral blood vessels.

The Truffle eye drops was administered 3 times per day for a period of 4 months. Intraocular pressure values dropped to 22 mmHg - 27 mmHg, and remained at these levels beginning with the first 10 days of treatment. After this time, the eye drops were administered 2 times per day throughout the entire study period (4 months). Due to lower intraocular pressure (IOP) after the administration of Truffle Eye Drops the patients exhibited no ocular pain. Even if the patients included in the study are blind, the goal of the therapy was to provide pain relief and to improve the quality of life.

CONCLUSIONS

Our study envisaged to test the Truffle Eye Drops on 46 patients (32 dogs and 14 cats) with congenital glaucoma, glaucoma secondary to posterior lens luxation, glaucoma secondary to intumescent cataract, glaucoma secondary to cataract surgery.

The results have clearly shown that in dogs and cats diagnosed with glaucoma (with the IOP values between 34-82 mmHg in dogs and 42-90 mmHg in cats), after the first week of treatment, the IOP values decreased to 18-25 mmHg in dogs and 22-27 mmHg in cats, and remained low throughout the treatment period.

We can, therefore, cautiously conclude that Truffle Eye Drops can be chosen as an alternative in glaucoma patients when the classical therapy has no results.

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