



HERBAL EYE DROP FOR THE MANAGEMENT OF OPHTHALMIC DISORDERS

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ABSTRACT

The inflammation of the conjunctiva is one of the common ocular disorders, which present redness, watering of the eye and conjunctival congestion and is most frequently occurring in the developing nations. Herbal eye drops are cheap, reliable and have little side effects than the costly synthetic drugs. In the present study, the herbal eye drop formulation was prepared and investigated for its anti-inflammatory (rabbits) and antiallergic activity (guinea-pig ileum), using *in vivo* and *in vitro* experimental models, respectively. The data was statistically analyzed using one-way analysis of variance (ANOVA) method. The minimum level of significant was fixed at $p < 0.01$ and $p < 0.05$. The present study was undertaken to elucidate the role of this herbal product in a variety of infective, inflammatory and allergic disorders.

Key words: Inflammation, Herbal, Eyes, *Berberis aristata*, Arq-e-gulab, Rabbits, Histamine.

INTRODUCTION

The herbal eye drop formulation is prepared for beneficial effects in inflammatory and allergic conditions of the eyes. They are cheap, reliable and have little side effects than the costly synthetic drugs, many of which have adverse effects and are beyond the reach of poor patients. The efficacy of many traditional herbal medicines in curing ocular diseases are now being gradually recognized in modern science as well¹.

Herbal eye drop is a polyherbal formulation indicated for anti-inflammatory and antihistaminic effect. The ingredients and their activity are presented in Table 1.

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Table 1: Formula for herbal eye drop and ingredients with their activity

S. No.	Drug	Activity/uses	Qty.
1.	<i>Berberis aristata</i> DC. (stem wood)	Anti-inflammatory ^{2,3} and antihistaminic effect	14 g
2.	<i>Azadirachta indica</i> A. Juss. (Gul-e-neem)	Anti-inflammatory activity ^{4,5} antihistaminic property has also been reported ⁶	2.8 g
3.	<i>Cassia absus</i> Linn. (seed)	Anti-inflammatory and astringent properties ^{7,8}	2.0 g
4.	<i>Embllica officinalis</i> (Amalaki) flowers	Cooling effect and anti-inflammatory property ⁹	2.4 g
5.	<i>Coptis teeta</i> Wall	Anti-inflammatory property ¹⁰	2.4 g
6.	Rose water	Conjunctivitis ¹¹ analgesic and antiseptic property	Up to 0.5 Lit.

EXPERIMENTAL

Plant material

All plant origin drugs and Alum were procured from Pacific College of Pharmacy, PAHER University, Udaipur (Rajasthan) and rose water was obtained from rose water distillation plant. The drugs were properly identified by the botanical literature available and then confirmed by Specimen voucher Nos. are presented in museum.

Preparation of eye drop

The herbal eye drop was prepared under aseptic condition as per the method described in Pharmacopeia¹² with slight modification. The different plant origin drugs were coarsely powdered and soaked in one liter Arq-e-gulab (aqua distillate of *Rosa damascena* Mill) for overnight in round bottom flask. The mixture was refluxed at 60°C for three hours. The mixture was then cooled, filtered and Alum was dissolved in this solution and again filtered. The resulting filtrate was collected and made up to one liter with Arq-e-gulab. Preservative (Phenyl ethyl alcohol) was added as in the solution. Finally the solution was filtered through syringe filter and then stored in sterilized vials (sterilized by autoclave).

Anti-inflammatory activity

The experimental work was carried out on eighteen healthy rabbits (selected at random), having an average weight of 1.5-2.0 Kg. This study was performed as per guidelines and norms of ethics.

Statistical analysis

All data were expressed as Mean \pm SE, and the data was statistically analyzed using one-way analysis of variance (ANOVA) method. The minimum level of significant was fixed at $p < 0.01$ and $p < 0.05$.

Antihistaminic activity

To check the antihistaminic activity, guinea pig ileum was isolated and prepared according to the method described by Ghosh¹³.

RESULTS AND DISCUSSION

In this study, we have tested herbal eye drop formulation for its anti-inflammatory activity against turpentine liniment-induced ocular inflammation in rabbit's eye and antihistaminic activity in isolated guinea pig ileum. Five days treatment with eye drop formulation reversed the turpentine liniment-induced inflammatory effects in rabbits. The effect was comparable to that of ibuprofen ophthalmic solution and was significant ($p < 0.01$) when compared with that of control group (Table 2).

Table 2: Anti-inflammatory effect of control, test and standard drug in turpentine liniment-induced ocular inflammation in rabbit's eye

Group (n=6)	Ocular lesions score (Mean \pm SE)				
	Day 1	Day 2	Day 3	Day 4	Day 5
Control	19.3 \pm 0.31	17.3 \pm 0.40	16.5 \pm 0.41	13.2 \pm 0.29	9.3 \pm 0.32
Test drug	19.0 \pm 0.32	15.0 \pm 0.32 x*	13.8 \pm 0.30 x**	9.3 \pm 0.21 x**	7.5 \pm 0.23 x**
Standard	19.0 \pm 0.32	13.5 \pm 0.42 x* y*	12.7 \pm 0.32 x** y*	7.8 \pm 0.21 x** y*	6.0 \pm 0.16 x** y*

Against control = x, * = $p < 0.05$; Against test drug = y, ** = $p < 0.01$

The eye drop formulation tested for antihistaminic activity in guinea pig ileum in the dose of 0.5 mL in a 50 mL bath showed relaxant effect on the tissue. The magnitude of the contraction of the tissue with addition of 0.1 mL of histamine in organ bath was found to be 48 mm whereas the magnitude of the contraction of the tissue with increasing dose (0.1, 0.2, 0.3 and 0.4 mL of histamine) was found to be 4 mm, 6 mm, 4 mm and 2 mm, respectively.

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