P^H of commonly used formulations in netra kriya kalpa

Introduction

The promotion of the visual acuity was considered as one of the priorities in the branch of Shalakya tantra of Ayurveda. Many procedures and formulations have been described to cure the ophthalmic disorders. Sushruta, the father of ancient Indian surgery, advocated 'Kriyakalpa' is the main therapeutic procedure for Netra Rogas [1].Kriyakalpa procedures are classified according to form of the drug, method of administrations, severity of disease and predominance of doshas these are namely tarpana, putapaka, pariseka, aschyotana, anjana[2]. In these procedures the medicines are intended for application to the conjunctiva, the conjunctival sac, or the eyelids. So, several factors like sterility, Clarity, osmolarity, pH, solubility, viscosity plays a major role in manufacturing as well as therapeutic usage of these medicament.

Among this pH is one of the important factors which decides the acidity or alkalinity of the drug which in turns determines the absorption[3]. This work is an attempt to see the pH of the common formulations which are used in netra kriyakalpa and how it influences the mode of action of these formulations.

Material and methods

In this study, fivecommonly used medicines (table 1) inthe department of shalakya tantra SDM college of Ayurvrda, Hassan were identified and their pH was measured using the pH meter in the QC lab of SDM college of Ayurveda, Hassan.

The pH for each of the formulations were taken three times and their average was calculated.

Table 1. Drugs and their quantity

DRUG	QUANTITY TAKEN	KRIYAKALPA
Triphalakwatha	10 ml	Pariseka
Triphalabalayastikwatha	10 ml	Pariseka
Panchvalkalakwatha	10ml	Pariseka
Vainateyaghruta	10ml	Aschyotana
Triphalaghruta	10ml	Tarpana

Observation and results

pH of the taken formulations ranges between 3 to 6 (table 2)

table 2.pH

FORMULATIONS	pH
Triphala kwatha	3.26,
Triphala bala yasti kwatha	4.96
Panchvalkala kwatha	6.55
Vainateya ghruta	5.43
Triphala ghruta	5.43

Discussion

the pH of the formulation depends on the ingredients and the media used. pH also has significance in the stability of the preperations[4]

Different factors affect the absorption of formulations like contact time and physio chemical properties like pH, viscosity, refractive index, ideally the pH of formulations should be near to that of tear fluid (7-7.3)[5]to maximise the rate of absorption.

When a formulation is administered to the eye particularly those with acidic or basic pH, it stimulates the flow of tears[6], tear fluid is capable of quickly diluting and taking out the medication there by reducing the contact period of the formulation with the eye.

Since all the medications that are mentioned here (table 2.) are having an acidic pH there is a need to retain the medicines in the eyes in order to get the intended therapeutic advantage. This is made possible by various kriyakalpas such as tarpana and pariseka, which ensures ideal contact period of medicine with the eye. Viscosity is another factor which ensures that formulation is retained in eye for sufficient duration due to its sticky nature, as seen in gruthas used for aschyotana.

Conclusion

This study was conducted to know the pH of commonly used preparations in netra kriyakalpa and to see whether there is any relation between pH and therapeutic effectiveness. In this study, we found out that most of the widely used formulations in netra kriyakalpa are having an acidic pH, which in turn leads to lacrimation and there by reducing the contact period.In this study we find the importance of netra kriyakalpas, whose main intent is to hold the medicine in eye in order to increase the absorption of medicine.

References

1. Anjaneya Prasad, N., Anil Kumar, *Singh, Akhilnath, P., Kalanidhi, H., & Dr, A. (2017). ROLE OF KRIYAKALPA IN THE MANAGEMENT OF NETRA ROGAS. *International Journal of Ayurveda and Pharma Research*, *5*(3)
2. Bhat, Pravin. (2016). A REVIEW ON KRIYAKALPA: THE MODERN APPROACH TO AYURVEDIC OCULAR THERAPEUTICS. International Journal of Research in Ayurveda & Pharmacy. 7. 12-16. 10.7897/2277-4343.075186.
3. Koehler A. E,Reitzel.R.J.the effect of ph on the oxygen consumption of tissues. (27/12/19);
4. Timothy J Snape, Alison M Astles. Understanding the chemical basis of drug stability and degradation. The pharmaceutical journal.
5. J.A.Perrigin,A.Morgan,S. Quintero,D. Perrigin,S. Browa,J. Bergmanson.Comparison of pH values of selected ocular Lubricant.(27/12/19);volume 45
6. J.A.Perrigin,A.Morgan,S. Quintero,D. Perrigin,S. Browa,J. Bergmanson.Comparison of pH values of selected ocular Lubricant.(27/12/19);volume 45