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# Normal Fungal Flora in Healthy Human Eyes

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**Original Research article**

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**Abstract:** Conjunctival mucosal flora, which include bacteria and fungi are mostly considered transient. The aim of this study was to observe and isolate conjunctival fungal flora in a group of 50 participants. Culture was done for 100 conjunctival swabs, collected from both the eyes of the participants. Growth was seen in 14 cultures, which were identified by observing colony and microscopic morphological characteristics. In this study, only hyaline fungal flora were isolated, among which *Penicillium* was most common. Additional studies are required to understand the microbiota and effect of environmental factors.
**Keywords:** Ocular, Normal flora, Transient flora, Fungal.

## INTRODUCTION

The concept of normal flora was established in 19th century. Normal flora are indigenous bacteria and fungi present on mucosal surfaces [1]. However, Viruses and Protozoa are not considered normal flora even if they show their presence in asymptomatic individuals [2]. Categorically, normal flora in the human body can be resident or transient [3].

There is continuous exposure of Conjunctival mucosa to different types of microorganisms present in the environment [4]. Flora in the conjunctival mucosa is mostly considered transient in nature. Since 19th century, scientific workers in many parts of the world have conducted numerous studies on normal flora in the human body.

However, in India very few attempts were made to study ocular normal Flora. So, this study was undertaken to observe normal ocular fungal flora in Human beings.

## METHODS

A total of 50 participants were included in this study. Samples were taken from both the eyes of the participants. Individuals have attended for refractive errors and intraocular problems like Glaucoma and Cataract. Conjunctival swab from the lower fornix of the eyes were collected under sterile conditions. Then the swab was inoculated of Saboraud Dextrose Agar followed by incubation at $25^0$C for four weeks. If no growth of microorganisms was observed for the entire duration of incubation period, media was discarded as negative growth. If Media showed any growth, identification was done by Colony and microscopic morphology. Additionally, Slide culture was done for growth positive cultures. Thereafter, repeated cultures were performed after four weeks.

## RESULTS

Age of the participants involved in the study ranged from 16-75 years. Among 50 participants, 18 of them had refractive errors, 12 had glaucoma and 20 had cataract. 100 eye samples were cultured and incubated under sterile conditions, out of which 14 showed growth (14%). Among these 14 growth positive cultures, 12 were from single eye of the participants and 2 were from both the eyes of the participants. Results showed that 11 cultures grew single organism each and 4 cultures grew 2 organisms each. The organisms isolated were *Pencillium* species, *Aperigillus* species, *Fusarium* species and unidentified hyaline fungi. Out of 13 growth positive participants, 4 have followed up and they did not grow any fungi in repeated culture.

## DISCUSSION

Discussion about normal flora in eye stared in 1948 by McNatt *et al.*[5]. Fungal flora was reported in 1958 by Fazakas *et al.*[6]. Since then few workers have reported normal fungal flora in different parts of the

world. In eye, they are reported as transient flora. Most common risk factors of fungal ocular infections are trauma and environmental factors which allow the transient flora to penetrate cornea.

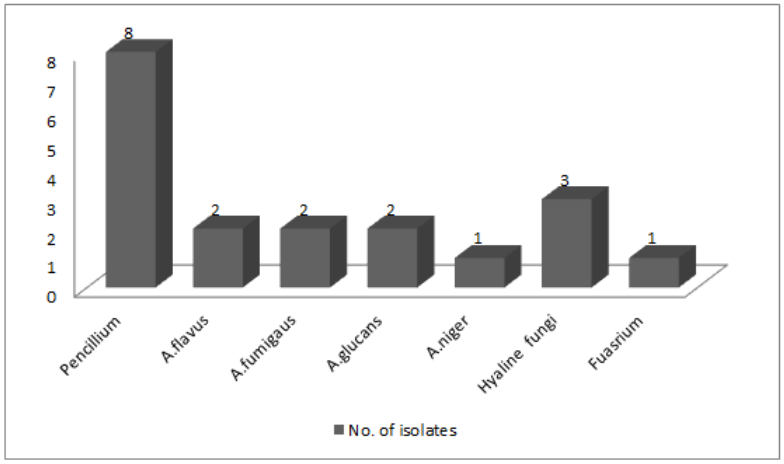


**Fig-1: Fungal isolates**

In this study, fungal flora was reported in both males and females in all age groups. Only hyaline fungi were isolated, among which *Penicillium* was most common. Various studies from different parts of the world have reported Ocular fungal flora between 2% to 30%. Fazakas *et al*.[6] have reported 25.4% in 993 eyes, J Williamson *et al*.[4] have reported 2.9% in 1106 eyes. In India very few relevant studies were done. Sinha et al from India have reported 13.4% in 112 eyes. Saxena *et al*.[7] reported 8.7%.

In this study, predominant species isolated was *Pencillium* followed by *Aspergillus* species. Saxena *et al*.[7] isolated *Pencillium* in 21 eyes (38.8%) and *Candida* in 20 eyes (38.4%). In the study conducted by J.Williamson *et al*.[4], seven fungal isolates were obtained, four of which were species of *Candida*. Faskas *et al*.[6] found 28 per cent of the isolates in his series of 993 eyes belonging to *Pencillium* group. However, this study doesn't confirm the transient nature of Ocular normal flora because participants did not follow up for the study.

## CONCLUSION

Further studies are necessary to determine and confirm the transient nature of the flora. Also, to determine effect of environmental factors on the nature of the flora isolated in the studies, attention of scientific workers in India is needed in this area of interest.

## REFERENCES

1. Thomas R Singer, Sherwin J Isenberg, And Leonard Apt. Conjunctival anaerobic and aerobic bacterial flora in paediatric versus adult subjects, British Journal of Ophthalmology, 1988, 72, 448-451.
2. Apurba Sankar Sastry & Sandhya Bhat K. Essentials of Medical Microbiology, Jaypee Brothers Medical Publishers (P) ltd.2006.
3. Nabaz Fisa Shakir Aghi, Normal conjunctival aerobes flora in Erbil city, polytechnic, vol. 6 no.3 October 2016.
4. Williamson J, Gordon AM, Wood R, Dyer AM, Yahya OA. Fungal flora of the conjunctival sac in health and disease. Influence of topical and systemic steroids. The British journal of ophthalmology. 1968 Feb;52(2):127.
5. McNatt J, Allen SD, Wilson LA, Dowell VR. Anaerobic flora of the normal human conjunctival sac. Arch Ophthalmol 1978; 96:1448-50.
6. Becker b, Friedenwald JS. Clinical aqueous outflow. AMA archives of ophthalmology. 1953 Nov 1;50(5):557-71.
7. Saxena H, Goswami P. Bacterial and fungal flora of the normal eye. Indian J Ophthalmol 1971;19:1305.