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Review Article

AYURVEDA AND MODERN PERSPECTIVE ON EYE CARE AND NUTRITION

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ABSTRACT

Eyes hold special status among all the sense organs because good vision is crucial for social and intellectual development of human beings. Hence eyes are the most precious gift of God to mankind. As per the WHO statistics global blindness due to eye diseases is 37 million, due to refractive errors it is 8 million. Ayurveda is a philosophy of life with holistic approach which plays an important role in prevention of blindness. Therefore, authentic Ayurvedic classics prescribe several preventive and curative measures for eye diseases including dietary advices. Many of the classics explained Chakshushya food items and drugs which can be regularly used and dietary and behavioral practices which are harmful for the eyes. Ghee, asparagus, amaranths sp., brinjal, snake gourd, green gram, bitter gourd, amalaki, barley, drumsticks, radish, flesh of birds, meat of wild animals, wheat, red rice, pomegranate etc. are the recommended food items by ancient acharyas. The ancient knowledge has been proved by the several clinical studies at modern era. Specially Vit A, C and E are responsible for lens and retinal defects such as cataract and ARMD respectively. Zinc and carotenoids are play a significant role on retinal and macular diseases. Vit C and essential fatty acids are responsible for dry eye syndrome, infectious eye diseases and Sjogren's syndrome. Hence it can be concluded that ancient knowledge regarding nutrients and eye care is undoubtable. Persons should take a balanced healthy diet which contains plenty of fresh leafy vegetables, fresh fruits and animal food products for the health and nutrition of eyes.

Keywords: Chakshushya, Nutrition, Micronutrients, Minerals

INTRODUCTION

Eyes hold special status among all the sense organs because good vision is crucial for social and intellectual development of human beings. Hence eyes are the most precious gift of God to mankind thus it is rightly justified as "Sarvendriyānām Nayanam Pradhānam" by Chanakya in Neeti Shatakaya. According to the WHO findings blindness and low vision are the magnitudes in eye. As per the WHO statistics global blindness due to eye diseases is 37 million, due to refractive errors it is 8 million. Low vision due to eye diseases is 124 million and due to refractive errors it is 145 million. Considering the causes of worldwide blindness cataract (39%) takes higher most place. The other causes are glaucoma (10%), ARMD (7%), diabetic retinopathy (4%), corneal scarring (3%) etc. It was revealed that 90% of world blind live in developing countries and 85% of all visual impairment is avoidable globally.¹

Ayurveda is a philosophy of life with holistic approach which can be played an important role in prevention of blindness and eye diseases. Thus ancient Ayurvedic sages were aware about the importance of eye. Ancient physician Vagbhata highlighted that for a man without eyes this world is useless; because the day and night are same for them even if the other sense organs are in healthy condition². It implies indirectly that the other sense organs are dependent on the eye sight. Therefore, many of the authentic Ayurvedic classics prescribed several preventive and curative measures for eye diseases including dietary advices. Acharya Susruta and many of scholars broadly explained the causes or aetiological factors of eye diseases, thus if anyone tries to avoid the same may protect their eyes.

OBJECTIVES

1. To collect food items which are recommended for eye care in authentic Ayurveda texts.
2. To review eye care and nutrition as per the modern view.

Dietary causative factors/nidāna of eye diseases as per the Ayurveda

Susruta, Charaka, Vāgbhata, Bhāvamisra and so many ācharyas well explained about the dietary (āharaja) and behavioral (vihāraja) causative factors of eye diseases. Among them the dietary causative factors can be concluded as follows.

1. Excessive use of Shukta (Vinegar), Aranāla (gruel or kanji in sour taste), Amla (sour edibles)³ and alcohol⁴
2. All of these are hot in potency (Virya) and Katu in Vipaka. Hot potency and Katu Vipaka are the opposites of Ōjas. Causes Ōjaskshaya and produces eye diseases.
3. Excessive intake of Kulatta (horse gram)³
4. Horse gram is predominant of astringent taste and Katu Vipaka. Thus vitiates Rakta Dhātu and Pitta Dosha; causes Raktaja and Pittaja eye diseases.
5. Excessive intake of Māśa (black gram)³
6. Black gram has Guru and Snigdha properties and sweet taste. It vitiates Kapha Dosha and causes Kaphaja eye diseases.
7. Excessive intake of liquids⁴
8. Intake of more liquids before, after or in-between the meals causes hypo-vitaminosis and produces eye diseases.
9. Excessive use of Ushna, Kshāra (alkaline) and Katu food, drinks and drugs⁵

10. Causes Ōjaskshaya and produces eye diseases.

Beneficial food items for eye according to Ayurveda

Many of the classics explained Chakshushya food items and drugs which can be regularly used. The Susruta Samhita quoted that a person who takes old ghee, asparagus (Shatavari), snake gourd (Patola), green gram (Mugdha), indian gooseberry (Āmalaki) and barley (Yava) regularly should not be afraid of the dreadful disease Timira (visual impairments).⁶ Water clove (Sunishannaka), bitter gourd (Karavella), amaranth species (Tanduliya and Vatsuka), brinjal (Vartaku), Kair (Karira), drumsticks (Shigru), radish (Mūlaka), flesh of birds and meat of wild animals (Jangala mansha) are also recommend for Timira. Further Susruta explained the food preparations of the same items such as Āmalaki and Shatavari can be prepared as Pāyāsa (milk rice). Also mentioned barley boiled with plentiful decoction of Thriphala and added profuse quantity of ghee alleviates Timira.⁷ Old ghee kept in an iron vessel is beneficial for Timira as well. Blurred vision is the initial symptom in the

eye diseases and characterized under Timira. Hence above mentioned items may increase the vision.

In Ashtanga Hridaya recommended that old grains like barley (Yava), wheat (Godhuma), brown rice (Shali & Shashtika), kodo millet (Kodrava), green gram (Mugdha) with ghee is beneficial for the eye sight. Meat of wild animals, vegetables, pomegranate, sugar, saindhava (Rock salt), plums (Drāksha) and rain water are also highlighted as Chakshushya by Vagbhata.⁸

According to Bhavaprakasha brown rice (Shali), green gram (Mugdha), barley (Yava), flesh of wild animals specially birds, amaranth varieties (Vatsuka, Tanduliyaka), snake gourd (Patola), spiny gourd (Karkatoka), bitter gourd (Karavella), flat beans (Nishpava) flesh of Vārtaka are the food substances which should be regularly used for preventive care of eye diseases. Bhavamishra recommended cooking all above mentioned food items with ghee. All the food items which are sweet and bitter in taste also can be used as Chakshushya dravaya.⁹ Yogaratnakara also highlighted sweet and bitter taste food as beneficial for eyes.¹⁰

Table 1: Beneficial food items for eye care in authentic texts

Food item	Susruta samhita	Ashtanga Hridaya	Bhavaprakasha	Yogaratanakara
Ghee	+	+	+	
Asparagus	+			
Amaranthus sp.	+		+	
Brinjal	+			
Snake gourd	+		+	
Green gram	+	+	+	
Bitter gourd	+		+	
Amalaki	+			
Barley	+	+	+	
Drumsticks	+			
Radish	+			
Water clove	+			
Flesh of birds	+		+	
Meat of wild animals	+	+	+	
Kair	+			
Wheat		+		
Brown rice		+	+	
Kodo millet		+		
Spiny gourd	+		+	
Flat bean			+	
Pomegranate		+		
Sugar		+		
Rock salt		+		
Rain water		+		
Plums		+		
Sweet & bitter taste food			+	+

Modern view of eye care and nutrition

There are more than fifty identified nutrients which included micronutrients and minerals for maintaining human body healthy. Many researches have been done which have proven relationship between eye care and nutrients. Specially vitamins A, C, E, B, carotenoids, zinc, selenium, copper, chromium, iodine, magnesium, potassium, essential fatty acids and omega-3 fatty acid are the most important micronutrients and minerals for health of eyes.

Micronutrients specially Vitamins A, C and E have anti-oxidant properties. Anti-oxidants play a major role in the lens and retina. Vitamin A is essential for the formation of rhodopsin which is a retinal photoreceptor (rods) pigments. Also it is important for the healthy maintenance of ocular surface. Thus deficiency of

Vitamin A leads to defective of night vision or vision in dim light and keratomalacia respectively. Also insufficiency of Vitamin A increases the tendency of viral infections. The level of Vitamin C in the aqueous humor increases with increasing dietary intake, which is suggestive of its importance to the lens.¹¹

Proteins are important for the cytoplasm of lens fibre and lipids for the cell membranes of the lens cells. Lipids are important in photoreceptor elements in the retina as well. The free radicals are neutralized by the bodily anti-oxidants. So that it is rational to consider enhancing the anti-oxidant status of eyes by nutrition to prevent cataract and promote healthiness of eyes. Many studies showed reduce risk of cataract in persons who take anti-oxidants sufficiently. One case control study proved that persons who take supplements of Vitamin A and C regularly have a

reduced risk of cataract.¹² Another study found that the use of multivitamins reduced the risk of cataract types.¹³ It proved that intake of riboflavin, Vitamin C, E and beta-carotene (Vitamin A) reduced the risk of cortical, nuclear and mixed cataract types. One placebo control trial showed that a significant reduction of incidence of nuclear cataract in the treatment group who got multivitamins and mineral supplements.¹⁴ Also Vitamin E was significantly associated with a protective effect for ARMD.¹⁵ Apart from Vitamin A, C, E and types of vitamin B Specially Vitamin B₃, B₁, B₂, B₆ and B₁₂ also essential for the healthy maintenance of optic nerve functions.¹⁶

The anti-oxidant vitamins which are of plant origin serve to protect the plant from the oxidative stress that results from the UV in sunlight and also from the plants own generation of O₂ by photosynthesis. Animals have repeated the benefit of eating these plant vitamins.

Already identified about 20 different minerals for human health. Among those Zinc, Selenium, Copper, Chromium, Iodine,

Magnesium, Manganese and Potassium are essential for the eye care. Zinc is important for several metabolic actions in the body specially for retinal and lens metabolic reactions. Zinc concentration in the choroid and retina is one of the highest level in the body.¹⁷ It implies the importance of zinc to the eyes.

Carotenoids and essential fatty acids are the other essential nutrients for the eye care. Carotenoids are a kind of yellow pigments found in coloured fruits and Vegetables; it is responsible for the retinal and macula lutea functions. Good serum levels of carotenoids reduce the risk of macular degeneration¹⁸ and protecting eye against ARMD. Essential fatty acids cannot be synthesized in the body thus have to fulfill by the diet. Gamma linolenic acid (GLA) and omega-3 fatty acids are requiring for the eyes. GLA is essential for prostaglandin formation, beneficial for conjunctivitis and Sjogren's syndrome which leads to dry eye. Omega-3 fatty acids are required for the normal development of the eyes and brain in infants.¹⁹ Also it is essential for the retinal functions at all ages.²⁰

Table 2: Eye care related food items

Nutrients	Food items
Vitamin A	Sweet potatoes, carrots, dark leafy greens, winter squashes, lettuce, dried apricots, cantaloupe, bell peppers, fish, liver, and tropical fruits
Vitamin B	Spinach, parsley, broccoli, beets, turnip and mustard greens, asparagus, romaine lettuce, calf's liver and lentils.
Vitamin C	Bell peppers, Amalaki, dark leafy greens, kiwifruit, broccoli, berries, citrus fruits, tomatoes, peas, papaya
Vitamin E	Spinach, almond, sunflower seeds, avocado, Shell fish, fish, broccoli, olive, pumpkin, kiwifruit, peanuts, spinach, asparagus
Zinc	Oysters, red meat, wheat gram, spinach, pumpkin seeds, cashew nuts, cocoa powder, white mushrooms, chickpea, chicken
Selenium	Brazil nuts, oysters, tuna fish, wheat bread, sunflower seeds, pork
Copper	Sea food, meat, egg yolk, soya beans, mushroom, radish, nuts
Iodine	Dried seaweed, cod fish, yogurt, tuna fish, turkey, egg, strawberry, potato
Omega-3	Flaxseed Oil, fish oil, chia seeds, walnuts, caviar, curd, canned fish, breast milk
Gamma-linolenic acid	Evening primrose, star flower oil, hemp oil, borage oil

DISCUSSION AND CONCLUSION

Ayurveda is a philosophy of life which explained well about the health maintenance of eyes. Apart from the treatments; daily and seasonal regiments, pathyāpathya are the supportive measures for well-being. Many of the ancient Achryas paid their special attention to dietary habits because considerable numbers of diseases are depending on the diet and the diet can be used as preventive measure as well. This was highlighted by Acharya Charaka as when wholesome food is taken it maintains the health and when unwholesome food causes diseases.²¹ Many of the authentic classics recommended green leafy vegetables i.e. amaranth species and grains i.e. barley, brown rice. These are containing high concentration of Vitamin A and Vitamin B respectively and most of the bitter taste food belong to green leafy vegetables which are contain anti-oxidants such as Vitamin A and C. Asparagus contain high amount of Vitamin B and E. Many of the vegetables i.e. snake gourd, bitter gourd, brinjal contain number of the micronutrients and minerals. Also fruits such as āmalaki, pomegranate contains high amount of Vitamin C and other vitamins as well. Apart from vegetables, grains and fruits ancient Achryas recommended animal food products i.e. ghee, meat of wild animals and birds. These animal originated food substances contain essential fatty acids, amino acids, vitamins and minerals. This ancient knowledge has been proved by the several clinical studies in modern era. Specially Vitamin A, C and E are responsible for lens and retinal defects such as cataract and ARMD respectively. Also zinc and carotenoids play a significant role on retinal and macular diseases. Vitamin C and essential fatty acids responsible for dry

eye syndrome, infectious eye diseases and Sjogren's syndrome. Thus it can be concluded that ancient knowledge regarding nutrients and eye care is undoubtable. Considering all above factors can conclude that nutrition plays a significant role in eye diseases. Therefore, persons should take a balanced healthy diet which contains plenty of green leafy vegetables, fresh fruits and animal food products which will be helpful for the preventive and curative of eye diseases.

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