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Review Article

VISION AND GHEE

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ABSTRACT

Vision is an active process of the eye which begins at birth. Eyes are the most important organs we have in relating to the world around us. They are the connection between the outer and inner worlds. We must protect and taking loving care of these delicate organs. Ghee is one which is having high utility in preventive, promotive and curative ophthalmology and multi utility in different conditions. Ayurveda has traditionally considered cows' ghee to be the healthiest source of edible fat, with many beneficial properties. Ghee carries the properties of the drug without leaving its inherent properties. This is the unique nature of ghee which makes its wider application in different disease conditions by processing it with specific drug as per condition. Ghee is rich in short chain fatty acids, which the body finds easiest to digest. Ghee also contains Vitamin A, D, E, K and Linoleic acid which is considered to have properties very similar to antioxidants. These contents are helpful in preventing oxidative injury of the eye.

Key words: Vision, Eye, Cows ghee, Short chain fatty acids, Antioxidant.

INTRODUCTION

Vision is not only what we see, but also what we are prepared to perceive. This is much more than opening the eyes. The ability to comprehend what we see is a process involving brain as well as the eyes. It has developed through trial and error. The way Homo sapiens sees today is the result of his development through the ages; the way each individual sees is the product of his or her own development throughout his or her life time. Vision is an active process which begins at birth and constantly under goes minor shifts and alterations due to: (i) a basic predisposition to specific personality, evident at birth, (ii) biochemical influences or nutrition and (iii) the physical environment. To put it in other words, vision is no mere passive occurrence like breathing, but is, instead, a complex and learned process which occurs mainly in the brain. The way we think affects our vision and our vision affects the way we think. Impaired vision narrows our field of vision and limits our perspective. Good vision is much more than acuity, which only refers to how clearly one can see. The functioning of the eye is compared with that of a camera. Both the camera and the eye have a lens to focus the image. Focusing in the camera is done by moving the lens, where as in the eyes, shape of the lens is automatically changed by the ciliary muscle.

The eye is to be understood as a sense organ and sense faculty (Jnanendriya). But in Ayurveda sense faculty is not perceivable. What we perceive as the eye is the sense organ or the abode of the sense faculty (Indriya adhistana). Though the faculty of vision is unperceivable it is made up of the collection of the effects of pentamerization of the five gross existents (Panchamahabhuta samudayatmaka). Ayurveda explains, that pitta dosha, the element of agni and tejas, governs our eyes.

Especially the sub doshas like Alochaka pitta and Sadaka pitta live in the eyes. Alochaka pitta which performs roopalochana is the main functioning factor in dristi patala. Quality of the object such as size, shape, colour etc. are detected by Alochaka pitta. It absorbs images and colours, allowing us to take in and digest all the visual impressions coming to us through chemical changes in the retina. Where as Sadaka pitta acts as a cognitive factor of perception interpretation of vision at the secondary visual area. When pitta is in balance, eyes are healthy, bright, clear, shiny, and luminous and we enjoy sharp eye sight. Impaired vision and eye problems are often related to pitta over drive. The function of Alochaka pitta is possible only in the presence of mind. So it can be considered as the basement factor. It is known to all that we cannot identify an object in the absence of mind. Hence mentally retarded patients are unable to identify the objects clearly. Tarpaka kapha is responsible for keeping the eye lubricated, moist and cool, through maintaining nutrition of the faculties including the eyes. Prana vata is responsible for the life force that runs throughout the head region to support the sense faculty. Sensory aspect of vision is wholly related to Prana vata. Movements of the eye balls, opening and closing of the eyes are to be attributed to Vyana vata¹.

On examining the eyes, it is evident that there is a sensitive balance existing between snigdha and ushna that is kapha and pitta. Vata is controlling and regulating the above two factors. Eye diseases are mainly possible with snigdha ushna and rooksha ushna combination of gunas. Snigdha and ushna gunas are responsible for Santarpanaganya diseases of the eye and rooksha ushna gunas are responsible for Apatarpanaganya diseases. Here ushana guna can be considered as the major factor for the eye diseases. The balanced state of ushna guna that is pitta is always needed for the proper functioning of the eye.

Therefore diet and regimens that are kapha pitta shamana especially pitta shaman are indicated as Chakshushya.

Chakshu is that which illuminates the objects and enlightens the mind about its details. Chakshu is single and seated in two eye balls. Though the word Chakshu applicable to both eye sight and eye ball, Acharya Chakrapani has restricted the meaning to the eye sight². The word Chakshushya symbolizes promotion of the eye sight³ or that which is good for the eyes. Chakshushya is the activity that enhances visual activity through nadi prasada⁴. A thorough evaluation of the drugs mentioned as Chakshushya in the Brihatrayi revealed that almost all of them are sheeta guna and madhra vipaka predominant. As per Acharya Sushruta milk and milk products provides all the nutrients for the proper functioning of the eyes. Cow's milk, butter and ghee are said as useful in visual disturbances⁵. Medicated ghee and rice processed with hundred years old ghee are said as chakshushya in the text Yogaratnakara⁷. Ghee is one which is having high utility in preventive ophthalmology and multi utility in different conditions.

Ghee is the elixir of life. The one sentence is enough to explain the importance of ghee. The history of ghee is not properly recorded but it is very old. Our old classical books "Vedas" approximately third century B.C. describe ghee. It occupies unique place in the life of human and is so closely woven in life that practically it is inseparable. Life begins and ends with ghee. With the advent of civilization, man started domesticating cattle. His search for food taught him to make use of milk. But preservation of milk was found difficult due to the lack of development of proper technology. It is visualized that only one constituent of milk i.e. fat could be preserved for longer time without appreciable deterioration. This could also be due to ease with which fat can be separated from other constituents. This very fact led to the development of products viz. butter ghee etc. which were concentrated forms of milk fat. Originally milk was allowed to sour; the curd thus obtained was churned to get butter, which upon boiling yielded ghee.

Four types of unctuous substances are mentioned in Ayurveda i.e. oil, ghee, animal fat and bone marrow. Out of these ghee is considered as superior owing to its special attribute i.e. samskarasya anuvartana of means that ghee carries the properties of the drug without leaving its inherent properties⁶. This is the unique nature of ghee which makes its wider application in different disease conditions by processing it with specific drug as per condition. Ghee is obtained from the class Mammalian of the animal kingdom (jangama) especially cow, she buffalo, goat, sheep, she camel and more. Out of them except the last two, the rest are main sources of milk and milk products in the areas of their habitat. Through the ghee of these animals' posses many common features, Ayurveda discriminates their particular features also and recommends the cow's ghee as best and ghee of choice for both food and medicinal purpose⁷. So that in the Ayurvedic classics and tradition, if not specified, the epithet ghee always applies cow's ghee. Ghee, also known as clarified butter or anhydrous milk fat, is prepared classically by two methods⁸. 90% of the ghee produced in the country is made by traditional method. Simple technology, inexpensive equipment, small scale of operation and superior organoleptic quality of ghee could be some of the reasons for this. The principle of ghee manufacture by this method entails (i) fermentation of milk (ii) a mechanical process named churning to gather milk fat in a concentrated form (iii) heating of the fat to just over 100°C to remove water content and (iv) filtering out the precipitated milk solids. The ghee so prepared had higher vitamin A and E contents and appreciably lower levels of

cholesterols. The direct cream method is another way of obtaining ghee from milk. As the name suggests, the ghee obtained by directly heat clarifying the cream. This ghee is mild and milky in flavor.

Qualities of ghee

Ayurveda has traditionally considered ghee to be the healthiest source of edible fat, with many beneficial properties. According to Ayurveda, ghee promotes longevity and protects the body from various diseases. It increases the digestive fire (agni) and improves absorption and assimilation. It nourishes ojus, the subtle essence of all the body's tissues (dhatus). It improves memory and strengthens the brain and the nervous system. It lubricates the connective tissues, there by rendering the body more flexible. With regard to the three doshas, ghee pacifies vata and pitta and is acceptable for kapha in moderation⁶.

In case eye is concerned, ghee is heavily utilized in three forms as preventive and curative medicine. These forms are

1. Pure ghee
2. Medicated ghee
3. Ghee treated with water (dauta ghrita)

Pure ghee

The text classified ghee in two type's viz., new (nava) and old (purana) ghee. The old ghee is considered to have more therapeutic value in eye diseases. Harita, Yogaratnakara⁷ and Bhavaprakasha⁸ mention, as the ghee gets old it increases in potency. It is mentioned that if ghee is preserved for hundred years it attains the power to cure all the diseases. The text emphasized that the new ghee is madhura in rasa and vipaka and alleviates vata, pitta, whereas the old ghee is katu and tikta in rasa, katu in vipaka and alleviates vata, pitta and kapha. In eye diseases ghee is utilized through both internal as well as external routes.

Internally ghee is considered as good chakshushya dravya⁹. Because of its rasayana property it has got high utility in preventive ophthalmology. It is also used as pathya in various eye diseases. It is an excellent anupana for the proper digestion, absorption and delivery of the drug to the target area. In shodhana procedures like vama and virechana, ghee is used as a snehana dravya. But in sama pitta stage unprocessed ghee is contraindicated, as it leads to complications. Ghee is also used as an ingredient in the oral medicines, which are beneficial in eye diseases.

Externally ghee is used in the form of Tarpana, Putapaka, Anjana, Parisheka, Aschotana, Pindi and Nasya. The term tarpana generally means bestowing contentment, satisfaction or strength by the use of nutritious foods and other materials. In the context of eye, tarpana means a therapy specially performed to strengthen the eye and improve the vision, where liquid part of ghee is poured and kept over the eyes within a fresh black gram paste pad. Due to pitta shaman property, ghee especially prepared out of milk cream is ideal for Akshitarpana. Putapaka is a therapy similar to tarpana, where instead of ghee liquid form of medicine extracted from the bolus prepared out of herbal and animal origin drugs through putapaka method (closed heating) is employed. Especially in case of snehana and ropana putapaka ghee is utilized as an ingredient in the preparation of medicine.

Ghee is also used in the form of anjana, along with other drugs, especially in ropananjana and prasadanjanana, where smooth paste form of drug is applied to the eyes. Parisheka /Seka is a

procedure where liquid form of drug is poured over closed eyes in the form of thin streams, to treat the diseases of the eye which are hard to cure. Especially in snehana variety of parisheka, ghee is used along with other drugs to cure vata predominant eye diseases. Aschotana procedure indicated in all varieties of acute form of eye diseases by instilling liquid form of drugs in to the conjunctival sac in the form of drops. In case of vata and pitta predominant diseases like Abhishyanda ghee used as an ingredient of formulations. The ghee extracted from milk cream has got greater importance in this procedure. When the paste form of drug is being tied with cloth and placed over eye to a specified duration is called as Pindi. In case of raktabhishyanda, pindi is prepared by using ghee along with other drugs. Nasya is one of the panchakarmas mentioned in Ayurveda. Nasya therapy is a process wherein the ghee is administered through the nostrils for the shaman and bruhmana purposes. Since nose is the gate way of the head, the therapy is highly effective in curing the disease of the eyes. Which has got direct influence on the functioning of the brain and on regular basis it keeps the eyes healthy.

Medicated ghee

When ghee is cooked with various substances like paste of drugs, and liquids like decoction, juice or milk etc. in specific proportions over mild heat till the appearance certain pharmaceutical parameters, is known as medicated ghee. This is one kind of samskara, where ghee is processed with various drugs, according to the desired action. Acharya Charaka defines samskara as transformation of the inherent attributes of a substance i.e. gunantaradhana. According to Chakrapani, this gunantaradhana by samskara is possible only in case of naimittika gunas, not in the case of samsiddhika gunas. That is true in case of ghee, where processing does not bring changes in the inherent properties of ghee instead of that it carries properties of added substances hence more potency. The basic aims of the procedure being acquire the liquid (water) soluble active principles in to the ghee, so that same ghee will attain variant therapeutic action and also help in reaching drug to the target area.

Commonly used medicated ghee's in eye diseases are Triphala ghrita, Mahatriphala ghrita, Jeevantiyadi ghrita, Patoladhi ghrita Shatahwadi ghrita etc. They are utilized both internally as well as externally as preventive and curative medicine. Orally medicated ghee is used as chakshushya dravya, shamana dravya, snehana dravya in the preoperative procedure of shodhana karma and it also used as anupana so that better target specificity. Externally medicated ghee is utilized mainly in the procedures like Akshitarpana and Bruhmana nasya. Through Akshitarpana with medicated ghee, drugs can reach the target area quickly as cornea possesses both hydrophilic and lipophilic characteristics. But medicated ghee produces more irritation in the eyes, when compared with plain ghee, due to alteration in the p^H of the ghee produced by the added substances during the processing. In vata disorders of the eye, Shatavari ghrita, Ashwagandha ghrita are utilized in the form of nasya and also it strengthen the mind and intellect.

Ghee treated with water (dauta ghrita)

When ghee is washed with cold water with little friction till the water becomes lukewarm then it is called as Dauta ghrita. If the same procedure is repeated for hundred and thousand times then that ghee is called as Shatadauta and Sahasradauta ghrita respectively. This procedure should be performed specially in a vessel made out of copper or bronze as both have got

chakshushya property. Dauta ghee appears like white butter and it attains more sheeta guna. Acharya Sharanghadhara mentioned the utility of Dauta ghrita in akshitarpana¹⁰ and in the book named Rasatantrasara it is used as a base for the preparation of anjana.

DISCUSSION

Eyes are an important sense organ for the active life of an individual, even where words fail to express, there the eyes finds the emotions. So, eye is that much important organ for the individual for a healthy life. Many manasika bhavas like harsha, krodha, kama, bhaya, dainya etc. are expressed through eye only. Through this sense organ perception of vision is taking place. The combination of Atma, Indriya, Mana and Artha is responsible for the perception of vision. Care of eye is much essential to maintain the healthy vision. Being aware of the importance of protecting our vision can help us to avoid problems in the future. Careless life may rob away the gods' gift from us at any time. Ayurveda the science of life gives great importance for the protection of eyes through different steps like dinacharya, ratricharya, rutucharya and diet. Acharyas are aware of the relation between nutrition and vision and they called it as chakshushya. Today, however, biochemical research has piled up so much data that connection between nutrition and good vision can no longer be ignored.

Ghee is considered sacred and used in religious rituals as well as in the diet in India. Our ancestors were used to drink ghee for maintaining good health. Ghee is healthy cooking oil due to its inclusion of various essential fatty acids that are vital to our diets. Ghee is rich in short chain fatty acids, which the body finds easiest to digest. These short chain fatty acids are the most edible fat and which are not found in any other edible oil or fat. Ghee also contains Vitamin A, D, E, K and Linoleic acid which is considered to have properties very similar to antioxidants. They helpful in preventing oxidative injury of the body. Ghee contains 4-5% Linoleic acid, an essential fatty acid, which promotes the proper growth of the human body.

Modern life style, spending long hours under harsh, glaring lights, which apparently uses up Vitamin A at an accelerated rate. So do polluted air, watching a lot of television and keeping awake till late in the night. The early symptom of Vitamin A deficiency includes burning, itching and inflamed eyes, a feeling that one has sand in the eyes. If the Vitamin A deficiency is allowed to progress unchecked, the condition of the eyes worsens. Severe deficiency of this Vitamin is characterized by extremely dry eyes and night blindness, finally Keratomalacia. As a matter of fact, Vitamin A deficiency is the main cause of blindness in rural India. In the absence of Vitamin A, ghee is considered as good source as food which keeps the epithelial tissues of the body intact, keeps the outer lining of the eyeball moist and prevents blindness. Like Vitamin A, Vitamin D also has equal importance in maintaining good vision. Vitamin D is also essential for the absorption of calcium from the diet, which gives strength to the eye muscles. Number of eye ailments including myopia can be successfully treated with Vitamin D and calcium. Several studies show that the myopic child is frequently deficient in calcium. The Vitamin D and calcium combination seems to dehydrate the fibrous coat of the eyeball. Due to dehydration of the fibrous coat, the eyeball actually shrinks back to the more normal shape, thereby reducing myopia. Ghee alone can supply both Vitamin A and Calcium, hence good vision. Vitamin E, the daily requirement can be completely obtained by consuming ghee. Vitamin E has been credited with doing just about everything; dissolve blood clots,

promote the healing of wounds and reducing scars, improve blood circulation, retard aging of the cells. These benefits naturally extend to the eyes also. Lack of Vitamin E leads to clouding of cornea, cataract and other abnormalities of lens and the retina.

In Ayurveda, ghee and medicated ghee's are having high utility in the preventive ophthalmology and multi utility in different conditions of eye diseases. Many Ayurvedic preparations are made by cooking herbs into ghee. In the process of evaluating the activities of natural compounds, it has been found by means of sophisticated research that when herbs are mixed with ghee, their activity and utility is potentiated many times. Ghee carries the therapeutic properties of herbs to all the body's tissues. It is an excellent vehicle for transporting the herbs to the deeper tissue layers of the body. Proper digestion, absorption and delivery to the target organ system are crucial in obtaining the maximum benefit from any therapeutic formulation; this is facilitated by ghee. The lipophilic action of ghee facilitates transportation to a target organ and final delivery inside the cell since the cell membrane also contains lipid. This lipophilic nature of ghee facilitates entry of the formulation into the cell and its delivery to the mitochondria, microsome and nuclear membrane. Lipophilic drugs penetrate the corneal layer easier than hydrophilic drugs. They enter the eye through the cornea by simple diffusion. The clearance rate of ghee from the eye is slow because of its viscosity. So, it shows sustained action for the same reason. The volume of ghee instilled into the eyes also affects bioavailability and effectiveness of the drug.

Along with natural sweet and pleasant aroma and agreeable taste, presence of large uniform size grains with very little liquid fat is a desirable characteristic of good quality ghee. Completely melted ghee on slow cooling to room temperatures, assume to form of large, coarse grains suspended discretely or clusters in a continuous liquid fat. Buffalo milk ghee shows more granulation than cow milk ghee, indicating the presence of higher concentration of saturated fatty acids. Hence in Ayurveda importance is given to cow milk ghee, as unsaturated fatty acids absorbed faster than saturated fatty acids. Especially in Akshitarpana, importance is given to the liquid part of ghee for the easy absorption through the cornea. When ghee is treated with water for several times, it attains an emulsion form, which acts as a good base for the Anjana preparations. High viscosity of this emulsion, prolongs the contact period of drug with the cornea, hence the better therapeutic effect. Advance study shows that short and medium chain fatty acids can act like an agent to kill a large species of virus and bacteria and provide protection against various infectious diseases¹¹

CONCLUSION

Eyes are invaluable. Philosophers have called them as windows to the soul. They evolved during the ages to work well for the hunter and the country farmer, but they are not suited for the life we lead today. We engage our eyes the whole day long in tasks for which they are not yet evolutionary ready. Incorrect and

excessive use of the eyes and inadequate rest to the eyes are the chief causes of visual problems. Very few amongst us are aware of the relation between ghee and vision. Ghee is the good source of Vitamin A, D, E, K, and Linoleic acid which are essential for the maintenance of healthy vision as well as have multi utility in different conditions of the eye. Ghee prevents the oxidative stress of the tissues and helpful in preventing degenerative diseases including the age related eye diseases. Antimicrobial activity of ghee is useful in treating inflammatory eye disease as an external application. Since the health of our eyes is closely linked with ghee, it is understandable that ghee most essential for our eyes.

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