



## Complementary Alternative Medicine for Viral Conjunctivitis treatment

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### Abstract:

**Background:** Onions, one of the oldest cultivated vegetables thousands of years in the world and had culinary and medicinal effect.

**The study aimed:** To assess the effects of onion as a complementary alternative medicine among participants diagnosed with viral conjunctivitis among the Sudanese communities.

### Material and methods:

This quasi-experimental study carried out in three states at Sudan (Khartoum, Aljazeera and North Sudan state) during the outbreak of conjunctivitis occurs in 2024. Snowball sampling technique was used to share the three plans for every infected person, first group applied onion juice as eye drops, second group cut the onion in circular parts and applied them as eye glass or batch and the third group rubbed their eyelids with the inner onion pulp.

The total number of individuals participated in study were 167, among those 12 participants (7.0%), from Omdurman, 62 (37.0%) from Aljazeera, and 93 (56.0%) were from the North of Sudan 56% (93).

**Results:** The result showed (59%) population reported their symptoms started to decrease from the first used, and (100%) of the population reported total recover occurred after third used.

**Conclusion:** The study concluded that the using onions as complementary alternative medicine for treatment the conjunctivitis reflected a magical effect within a short period without any harm effect or allergic reaction for the participants.

**keywords:** Onions, Conjunctivitis, Viral outbreak, Sudan, Complementary, Alternative Medicine.

## 1-Introduction

Using onions as complementary alternative medicine challenges based on experimental modern medicine studies. According to experiment, onion has an inhibitory effect on the growth of normal eye flora and treat common eye



infections, such as conjunctivitis and blepharitis.<sup>1</sup> Conjunctivitis is an inflammation of the conjunctiva' semitransparent membrane starts at limbus of the cornea, covers the sclera and posterior eyelids' surface'. It is caused by virus, bacteria, or allergic. The manifestations of conjunctivitis are pain, engorgement of blood vessel and redness, addition to pseudomembranous photophobia and ocular discharge<sup>1</sup>.

Viral conjunctivitis is highly contagious mostly in the first two weeks due to spread of adenovirus through contaminated hands. It is a self-limiting infection but using cold compresses and artificial tears help in relieving the symptoms. Frequent hands hygiene and avoidance eye contact prevent its transmission.<sup>1,2,3</sup>

Application of the onion on the eyes based on the benefits of onion or *Allium cepa* on literature review. Onion has been used for many centuries as a natural flavoring, herbal medicine, and had religious connotations among some civilizations. Onions have strong properties as antioxidant, antibacterial and anti-inflammatory, which contain flavonoids, steroid saponins, polysaccharides, fructose's, saccharose, thiosulfinates and volatile compounds<sup>1</sup>.

Among old civilizations, unproven treatments were used to treat different types of ophthalmological diseases, including injecting cobra venom for macular degeneration, acupuncture, dietary supplements and herbal remedies.<sup>2</sup> Onion was prescribed as treatment and prevention of cataract, epiphora and blepharitis.<sup>1</sup> Also avoided uses artificial eyes lenses or makeup during conjunctivitis.<sup>3</sup>



Complementary alternative medicine challenges based on experimental studies face new to modern medicine <sup>4</sup>. Greece and Roman's philosophers Hippocrates and Pliny praised on onions medicinal value on vision problem and improve eye health. Also used in traditional Chinese remedies and Egypt in treatment of eye disorders. Onions are a good source of vitamin C, which contributes to a healthy immune system and eaten raw onion have anti-inflammatory effects and beneficial for eye health.<sup>5,6</sup> The objective of the study is to assess the effects of onion as complementary alternative medicine on viral conjunctivitis of the human.

In previous study method was dipped a cloth in onions juice after diluted with cold water, then applied over the eyes 10 minutes twice per day to reduce the hot sensation<sup>7</sup>. To prevent the spread of conjunctivitis among the population instructions should be followed including frequent hands wash, avoid close contact, rubbing eyes, contact lenses or share personal items and towels <sup>8,9</sup>.

In one experiment study, onion and garlic extracts slowed the growth of several microbes. Onions act as antioxidants and anti-inflammatory which contain several items such as carbs, fibers vitamins, minerals and Sulfur, that prevent microorganisms' growth and blood clot formation. <sup>10,11</sup>. Studies were done in vitro to investigate the antimicrobial properties of fresh onion juice on the eyes of live models. The result post application onion juice drops in rabbits has an inhibitory effect on the growth of normal eye flora and thus they reported that onion has antimicrobial properties to treat common eye infections. <sup>12,13,14</sup>



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## **2-Material and methods**

### **2-1- Study Design**

This experimental study used Quasi experimental design to demonstrate onion as alternative medicine to treat viral conjunctivitis.

### **2-2- Study Setting**

In 2024 after one year of starting the war in Sudan since 2023; there were widely spread of pandemic viral conjunctivitis among Sudanese population. The infection started in the North state of the country due to overcrowded of population then rabidly transfers to Aljazeera and Omdurman as the people migrated. The infected people complained of eyes redness, severe pain, headache, reduction of vision and some of them have swelling of the eyelids. They used antibiotic eye drops and ointments in addition to the cold compresses, but the symptoms were still present and spreading continuously.

### **2-3- Interventional Approach**

Application of the onion juice as alternative medicine on the eyes-based literature review and a history about the onion uses was constructed the steps of uses and explain the side effect of the onions may not fully discovered.

The intervention followed in this study consisted of the three methods of onions used. Each group used one method twice a day for three days on the infected eyes. Group one applied the first method which prepared fresh onion juice as the eye drops that applied twice a day for three days in the infected eyes, group two used the onion as a part catted in circulars form and applied as the eyeglasses, and the third group used the onions inner parts to scratch the



eyes lids in addition eaten on salat. Also, explanation for participants to follow precautions steps to prevent infection transmission, that included frequent hands wash, avoidance share personal items and close contact.

### **Onions Preparation Form**

The techniques or the methods of preparation of an onion used in this experimental study included three methods or forms. The first method is to crush fresh red onion and filter its juice and apply it as eye drops, the second method cut the fresh onion in circular shapes and used as eye glass or patches, and the third one cut small part from inner side of fresh used inner part of onion and apply on the eye lids addition to eaten on salat. Full explanation about irritation and allergy was discussed to participants.

### **2-4- Inclusion and Exclusion Criteria**

This study included infected participants, male and female, have no allergic to onions who agreed to participate and adhered to the study protocol and excluded healthy person, and everyone who didn't agree to participate or have allergic to the onion.

### **2-4- Study Sampling**

Snowball (referral) sampling technique was used to share the plan among infected persons. The total number of individuals who participated in the study were 167 distributed in different areas of the Sudan states; Omdurman Aljazeera and the North of Sudan after agreement to participate.



## 2-5- Method of Data Collection

Used statistical and analytical barometric technique "checklist" as a tool for primary data collection, based on historical data; to figure out future trends based on current results.

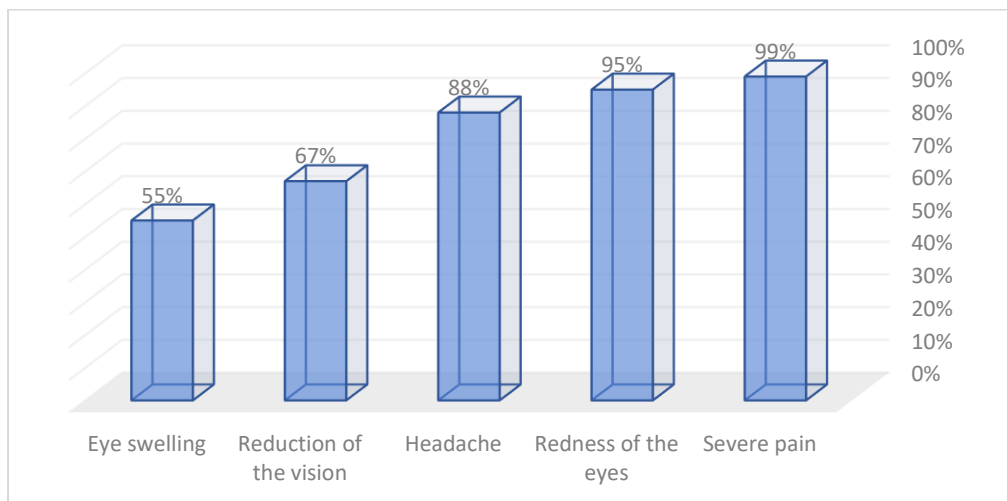
## 2.6-Data Analysis

The data collected was analyzed manually by using excel sheet

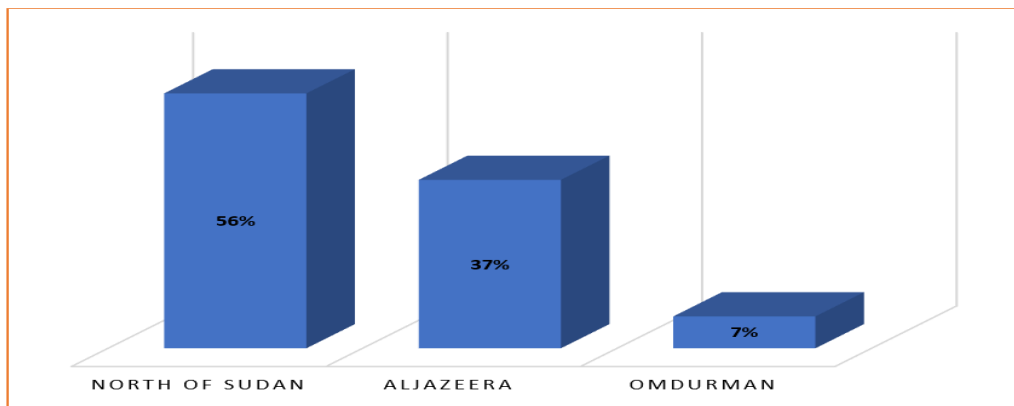
## 2.7- Ethical Consideration

The study was conducted after the participants agreed to enrolled. The study of protocol was fully expanded for each participant before engaging in the study. The subject was informed about the right to withdraw at any time from the study. Confidentiality was maintained during and after the study.<sup>15</sup>

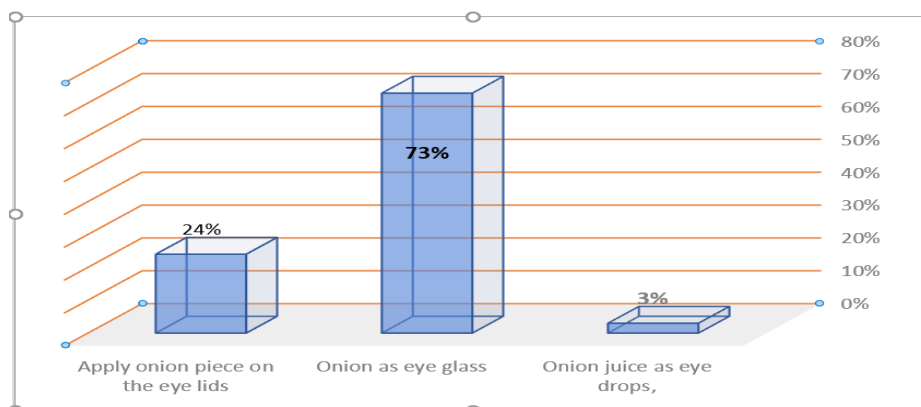
## 3-Results:



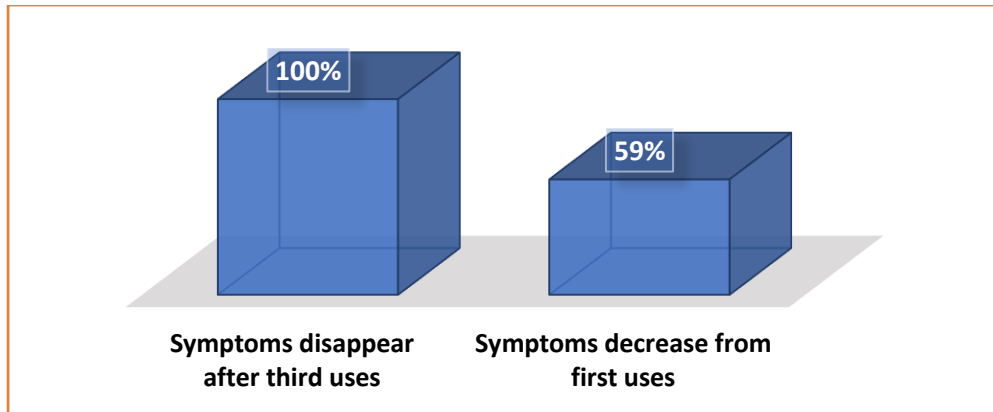
**Fig.1 Symptoms of conjunctivitis among participants. (n=167)**



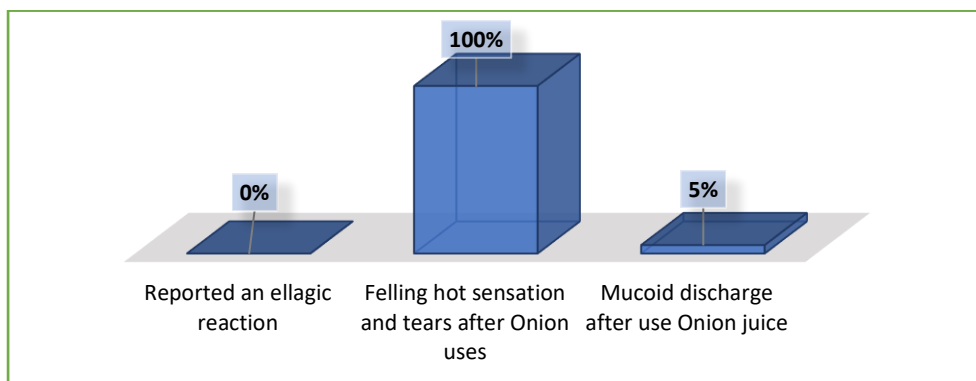
**Fig.11 Participants used Onion as alternative medicine for treatment of conjunctivitis. (n=167)**



**Fig.111 Participants used different methods of Onion as alternative medicine for treatment of conjunctivitis. (n=167)**



**Fig.1V Effect of onion on the symptoms. (n=167)**



**Fig. V Participants reported their experiences after using Onion on infected eyes. (n=167)**

#### 4- Discussion:

When developed or breakout of viral conjunctivitis in Sudan during war at in North of Sudan, Aljazeera and Omdurman. most of affected participants in North of Sudan, Aljazeera and Omdurman complaint and reported pain, redness, headache, swelling and reduction of vision. These are typical symptoms of viral conjunctivitis except no one of them participants complained from form pseudomembranous photophobia.<sup>1</sup> Most of experiment





studies reported that onions rich in an essential component, also have antioxidant and anti-inflammatory properties to treat common eye infection and prevent<sup>4,5,10,11,12,13,14</sup> microorganisms' growth.

The participants used fresh red onion as a complementary alternative medicine when the medical treatment failed to reduce their eyes' symptoms. The literature explained the fact about viral conjunctivitis symptoms were relieved by using cold compresses and artificial tears.<sup>1,2,3</sup>

The present study revealed that the participants used different methods of Onion as alternative medicine for treatment of conjunctivitis 73.0% used onion as eye glass, 24.0% applied onion pieces in eye lid and 3.0% applied onion juices as eye drops, the symptoms decrease by 59.0% from first demonstration of onion and 100% symptoms disappear after three-time application all of participants reported feeling of hot sensation during uses of onion over their eyes, and few of members reported mucoid discharge. Most of participants followed second and third methods of treatment reported that these methods were ~~and~~ lead to minimal feeling of hotness sensation of their eyes. In a previous study diluted juice of onions with cold water to reduce hotness sensation was used.<sup>7</sup> Among all participants none of them reported an allergic reaction this is disagree to that ~~while mentioned~~ highlighted in literature as onions can lead to an allergic, or severe anaphylaxis in some individuals.<sup>5,6</sup>



## 5- Conclusion:

Onions rich with important components help onions to act as anti-inflammatory. Using onions as complementary alternative medicine for treatment of conjunctivitis reflected a magical effect within a short period without any harm or causing negative effect.

**Acknowledgement:** acknowledge of all participants who agree to follow the plan of treatment viral conjunctivitis and help to spread the information to other infected cases outbreak areas.

**Conflict of interest:** The author declares no conflict of interest.

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**Appendix: Onions forms used by the participants.**





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**Fresh Onion Eye Glass**