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Editorial

A Universal Ophthalmic Drug for Viral Conjunctivitis: Is it a Reality?

Marianne L Shahsuvaryan*

Department of Ophthalmology, Yerevan State Medical University, Yerevan, Armenia

***Corresponding Author:** Marianne L Shahsuvaryan, Department of Ophthalmology, Yerevan State Medical University, Yerevan, Armenia.

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Viral conjunctivitis is a highly contagious acute inflammation of the conjunctiva [1], manifesting by hyperemia, watery discharge and photophobia and representing the most common cause of infectious conjunctivitis in the adult population responsible for 80% of cases [2].

Despite the fact that it is commonly caused by adenovirus [2], it is a growing body of evidence that currently a novel coronavirus (CoV) named severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is a widely spreaded causative agent also [3-9], which highlights an importance of addressing a treatment issue in this emerging disease.

Ophthalmologists face a host of new challenges in the management of viral conjunctivitis. Currently recommended treatment includes cold compresses and artificial tears representing non-ethiopathogenetically-oriented approach and the measures directed to avoid spreading. Aforementioned indicates a necessity for search a low cost, but highly effective therapeutic agents.

The Povidone- iodine (PVI) could be discussed in this light, taken into account the years history of it's usage in ophthalmology as an antiseptic agent for preoperative preparation of the eyelids, eyelashes and conjunctiva [10] and recently as a 0.6% Povidone Iodine Eye Drops in anti-VEGF Intravitreal Injection [11].

Povidone-Iodine is described as "an iodophor solution containing a water-soluble complex of iodine and polyvinylpyrrolidone (PVP) with broad microbicidal activity. Free iodine, slowly liberated from the polyvinylpyrrolidone iodine (PVPI) complex in solution, kills eukaryotic or prokaryotic cells through iodination of lipids and oxidation of cytoplasmic and membrane compounds" [12].

Antibacterial properties of PVI are well studied and well confirmed, and are beyond the scope of this medical essay, but in a last few years a more attention is paid on it's antiviral effect [13].

Virucidal activity of PVI was evaluated in multiple laboratory studies, specifically impact on adenovirus [14-16] and confirmed in clinical studies [17-21].

Besides adenovirus, antiviral effect of PVI has been widely studied [22-36].

Multiple *in vitro* studies have documented the broadest spectrum of PVI's antiviral activity against herpes simplex virus, influenza, human cytomegalovirus, HIV, Ebola virus, mumps, rotavirus, poliovirus, coxsackievirus, rhinovirus, rubella, measles, papillomavirus, murine norovirus.

Laboratory studies have shown efficacy also against SARS-CoV [37,38].

The above sources appear to indicate there is a biological base for the antiviral effect of PVI on outer eye structures. The questions will be answered are: the optimal concentration and dosing of the eye drops to accelerate a tolerance and bioavailability, and prevent toxicity to cornea. The latest research on the matter have evidenced that a new formulation of PVI as a 0.6% Povidone-Iodine Nanoemulsion eye drops have a good safety and tolerability profile in patients with compromised ocular surface due to dry eye [39]. In addition, a simultaneous antibacterial effect of the PVI could be used also in viral conjunctivitis complicated by secondary infection.

Summarising, the rationale for using Povidone-iodine in viral conjunctivitis appear to involve a combination of antiviral and antibacterial effects. Currently available findings suggest that Povidone- iodine represents a cost-effective user-friendly viable option for treating all types of viral conjunctivitis opening a new therapeutic avenue.

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