

iCLOdrops (iCLO after putting in eye drops)

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DESCRIPTION

iCLO (Figure 1), which was coined as an abbreviation for “eye closure”, is a new management method that involves resting the eyes [1,2]. It is defined as “a method wherein one actively closes one’s eyes, even for a short period in a safe environment, when they would otherwise just be idly open and when there would be no detriment caused by closing one’s eyes.” Our previous study showed that the subjective symptoms of ocular fatigue, dry eye, and blurred vision improved, and the interblink interval was shown to be shorter when people engaged in iCLO [3]. The present paper is intended to introduce “iCLOdrops” (Figure 2), which is to make iCLO a habit after putting in eye drops. iCLO drops was coined as an abbreviation for “iCLO after putting in eye drops.” The performance of iCLOdrops has advantages specific to eye drops compared with the iCLO advantages we have shown, along with the potential to solve the problems associated with putting in eye drops. Eye drops are the most common method of ophthalmic treatment. However, management of the eye drop method is often difficult and insufficient with only the guidance of doctors and pharmacists, and it is currently left to the patients themselves. As shown next, there are two challenges with eye drop management: an increased effect with eye closure after eye drop instillation; and reduction of side effects caused by eye drops. Performing iCLOdrops has the potential to solve these challenges.

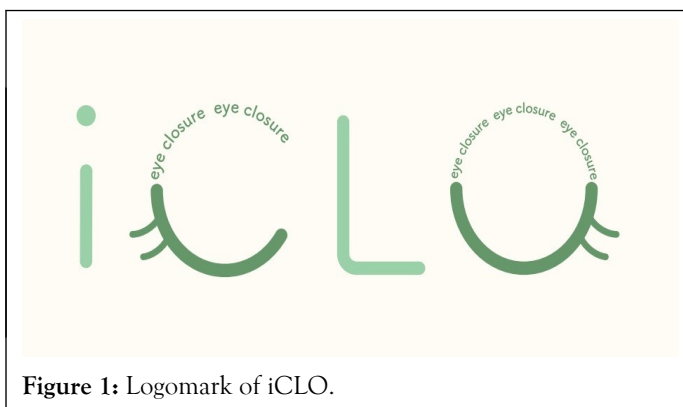


Figure 1: Logomark of iCLO.

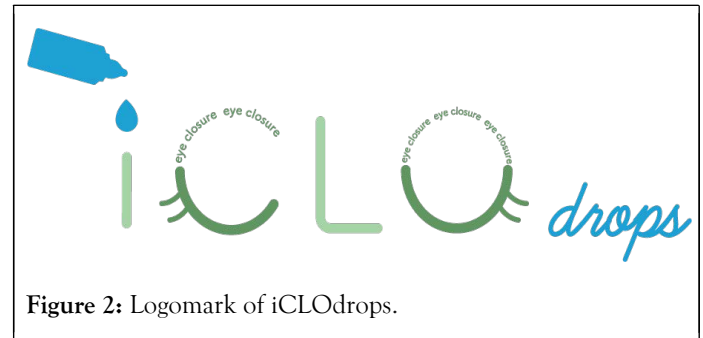


Figure 2: Logomark of iCLOdrops.

It is widely recommended that the eyes be closed for about a few minutes after putting in eye drops. Studies have shown that it takes at least 2 minutes for the drop to completely penetrate the surface of the eye to get inside [4]. Blinking causes the eye drop to be pumped away into the tear system, thus diluting its effect. Eye closure after eye drop instillation gives the drop time to be absorbed by the eye, instead of draining into one’s nose. Therefore, eye closure after putting in eye drops is very important to increase the residual time of the eye drop, maximize effectiveness, and minimize systemic side effects [5]. However, eye closure after putting in eye drops is not widely practiced because it may be considered tedious and a waste of time. The performance of iCLOdrops can be expected to play a major role in this situation. When performing iCLOdrops, a variety of tasks can be carried out simultaneously, such as listening to music or the radio, stretching, doing yoga, meditating, using a hair dryer, and applying makeup (blending lotion or cream, applying a facial pack). Performing iCLOdrops with these tasks could be routinized as a series of actions, so that closing the eyes after putting in eye drops becomes a habit. It is also expected that repeatedly putting in eye drops followed by iCLOdrops may improve adherence to the eye drops themselves. Thus, performing iCLOdrops as a habit would lead to higher efficacy of eye drops with no time loss.

Glaucoma is a leading cause of irreversible blindness worldwide and the second most common cause of blindness after cataracts. The progressive optic neuropathy associated with glaucoma results in loss of visual acuity and constriction of the visual

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fields. Intra ocular pressure (IOP) is the only known modifiable risk factor for glaucoma. Currently, the most common treatment for glaucoma aims to lower IOP with the use of eye drops. Performing iCLOdrops may enhance the IOP-lowering effect of eye drops. In the treatment of glaucoma, if one type of eye drop is insufficient to lower IOP, additional types of eye drops are added. It would be worthwhile to check the patients' eye drop methods and instruct them to perform iCLOdrops before this, because eye closure has been proposed as a potential method to increase ocular absorption of drops. A number of different categories of eye drops are used to treat glaucoma. Among them, prostaglandin analogs (PGAs) are the first-line agents because they are highly effective in lowering IOP, require only once-daily eye drop instillation, and have few systemic side effects. However, about 50% of individuals who use PGA eye drops may have some side effects after using them for more than 1 month, defined under the constellation of Prostaglandin-Associated Periorbitopathy Syndrome (PAPS) [4]. Notable signs of PAP include Flattening of the Lower Eyelid Bags (FLEB), Deepening of the Upper Eyelid Sulcus (DUES), upper eyelid ptosis, orbital fat atrophy, eyelash growth, and increased pigmentation of the periorbital skin. These side effects are caused by the eyedrops adhering to the eyelashes and around the eye when they are applied. For this reason, it is widely recommended that patients wash their face and eyelids carefully with water after using PGA eye drops, because washing too late could cause them to be absorbed into their skin, causing the side effects. However, not all patients make it a habit to wash their faces and eyelids with water. Therefore, overcoming this problem is imperative, and performing iCLOdrops is expected to address this. Brushing

one's teeth, removing makeup, washing one's hair, and getting into the bathtub are optimal times for iCLO. Therefore, we think it is essential to make it a habit to perform iCLOdrops at these times immediately after putting in PGA eye drops, and then immediately afterwards washing the eye area as a series of steps. In addition, eye closure after using PGA eye drops is especially important, because the eye drops tend to spill out of the eye due to blinking after they are instilled. We believe that iCLOdrops have the great advantage of avoiding frequent blinking after PGA eye drops, which minimizes the adhesion of the eye drops around the eyes and reduces side effects.

To summarize, performing iCLOdrops has benefits specific to eye drops, in addition to the value of iCLO itself. We believe that performing iCLOdrops has the dual benefit of potentially increasing the efficacy of the eye drops and reducing their side effects.

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