

Upon the Collyriums

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Littré (1908) [1] says that eye drops are a solid medicine, elongated and cylindrical, that was intended to be introduced into the anus, ears, nostrils or vagina. He adds that it is also all topical medication applied to the eye, or rather to the conjunctiva. There are dry, powdery, soft or ointments, liquid and even gaseous.

The word colirio comes from the Greek collyrion, in plural, collyria, which happened to Latin as collyrium. The Romans used this term to designate soft medicines with rubber, in the form of a solid roll, which dissolved in water, oil or wine, and was applied to the eyes. In later centuries the word was applied to powders and ointments, and is currently used for aqueous solutions that are instilled in the conjunctival sac or in the form of lavatories.

For some years, government agencies have demanded that eye drops not be irritating to the eye, for which they must have:

- a) An osmotic pressure equal to that of tears or plasma, i.e. a concentration between 0.9 and 1.1 of sodium chloride in 100 cubic cm of water. Discomfort appears below 0.6 and above 1.5% NaCl (sodium chloride).
- b) Its pH must be between 7 and 7.4. Below 6.6 and above 9 there are discomforts. To maintain an acceptable record, buffer solutions based on borates, phosphates and citrates are used. Some solutions are unstable at a certain pH, some substances are oxidized when there is a certain alkalinity, such as adrenaline, serine and procaine, among others, zinc salts are inactivated in alkaline medium and solutions of sulfonamides precipitate below 8.2, while fluorescein is only soluble with a pH of 9.
- c) They must be sterilized.
- d) They should not interfere with the action of the lysozyme of tears, which can be destroyed by traces of acids or alkalis. It can also be inactivated by copper sulfate, silver nitrate and other substances.
- e) The temperature may be of some importance in the case of eye lavatories, which should be similar to that of the human body; On the other hand, it can be neglected when one or two drops are instilled, as they quickly warm up when the eye contacts it.

The substance diluted in eye drops reduces its force by half in 45 seconds and to a thousandth in 8 minutes. This rate of dilution can vary a lot, depending on the tear secretion, which is lower in men than in women, less in the old and in the eye not irritated or not inflamed [2,3].

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3. Webster's Dictionary. Merrian Co. Springfield (1951).

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