Introduction
Soft contact lens wear can alter tear film stability reducing thickness of tear film pre-lens and of lipid layer (1) and TFBUT (2). The effects of these variables has been demonstrated to cause an increase in tear film osmolarity (3). Even if it is not still clear what mechanism is at the basis of this variation, it has been proposed that the dehydration of the contact lens which becomes hyperosmotic could act as osmotic gradient causing the increase of tear film osmolarity. Another proposal considers instead the opposite mechanism asserting that the tear film evaporation causes an increase in osmolarity determining the osmolarity gradient which provokes a loss of water from the contact lens and a corresponding increase in its osmolarity. An interaction between the two factors might also be considered as a possibility (4). Tear film osmolarity is one of the objective features recommended in the Report of the 2007 International Dry Eye Workshop (DEWS) to define dry eye (5). Hyperosmolarity has been widely shown to cause epithelial damage, contributing to development of KCS and most likely the release of an inflammatory reaction (6). For this reason, it is fundamental that the contact lens used alters in the most useful way the tear film osmolarity.

Methods
We selected 50 patients between 18 and 42 years of age with no disease of anterior segment, no prior use of contact lenses, no medications, and no contraindication for the use of contact lenses. The refractive error was similar in both eyes and included between -1.00 dt and +4.00 dt to maintain a similar thickness. We measured the tear film osmolarity using the TearLab® (Ocusens San Diego CA) after having calibrated the instrument with the provided solutions. To measure tear film osmolarity with the TearLab® it is necessary to collect only 50 nL and the procedure to take the sample from external lower tear meniscus does not cause reflex lacrimation (fig.1). The patients that were selected had a tear film osmolarity between 308.2 mOsm/L and 328.2 mOsm/L, which represents an interval that can be considered associated with marginal dry eyes (fig.2) (6), with a lower tear meniscus does not cause reflex lacrimation (fig.1). (6). We have evaluated also the comfort using a numerical rating scale divided in ten steps from 0 (not tolerable) to 10 (excellent comfort).

Results
The average of tear film osmolarity in right eyes before contact lens fitting was 323 mOsm/L (SD ± 4.3) and 326 mOsm/L (SD ± 13.3) after the use of Omafilcon A contact lens and the difference between the measures was not significant for the t test (p=0.17) (fig.3). In the left eyes the average tear film osmolarity before contact lens fitting was 323 mOsm/L (SD ± 4) and 340 mOsm/L (SD ± 15.64) after the use of Methafilcon A contact lens with difference between the measures significant for the t test (p<0.001) (fig.3). In the present study, a low correlation was found between tear film osmolarity and comfort of contact lens used t²=0.178 for Omafilcon A lenses (fig.4) and t²=0.16 for Methafilcon A lenses (fig.5).

Conclusions
The results of our study indicate that lenses made in different materials can have a different impact on the tear film osmolarity. Even though the contact lenses that were used had similar hydration, the chemical nature of the materials were different. In fact, Omafilcon A incorporates phosphorylcholine which has a water retainer effect (7). Even if the hydration value was not measured after the lenses were removed, one can hypothesize that the lens in Omafilcon A dehydrate less than in Methafilcon and have a smaller effect on the tear film osmolarity. Since a low correlation was found between comfort and osmolarity, one can think that an increase in osmolarty is not the major factor that determines a contact lens wearer’s discomfort, and is more likely that the modification of comfort is related to more factors together (8). In conclusion, the measurement of tear film osmolarity can help clinicians to identify materials that increase tear film osmolarity least, in the end to help avoid one of the most important factors in the determination of dry eye syndrome.

References
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