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INTERNATIONAL CONGRESS OF THE
EGYPTIAN OPHTHALMOLOGICAL SOCIETY
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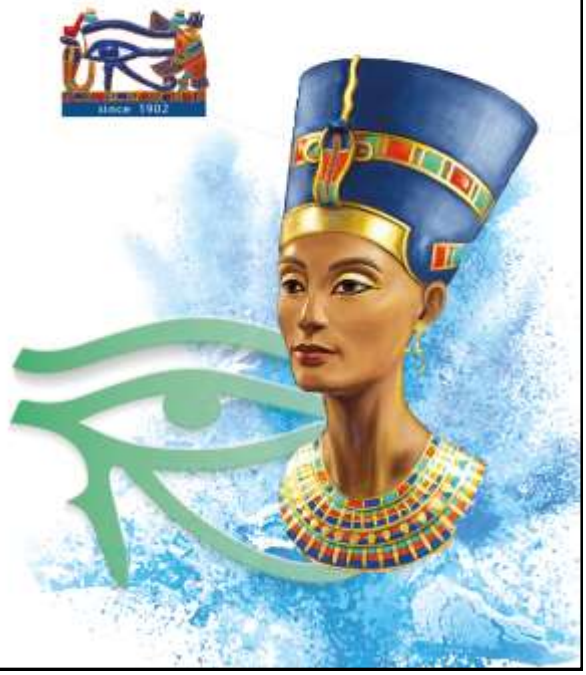
# Autologous Platelet Rich Plasma Versus Autologous Serum Eye Drops In Treatment Of Severe Dry Eye Disease



**By**

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## Introduction

Dry eye disease is defined as a multifactorial disease of the ocular surface characterised by a loss of homeostasis of the tear film and accompanied by ocular symptoms in which tear film instability, hyperosmolarity, ocular surface inflammation, and neurosensory abnormalities play etiological roles.

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- DED can influence individual's ability to perform daily tasks and can negatively affect their quality of life via many ways relating to decreased quality of vision and the development of psychological issues such as anxiety and depression.

- Prevalence of DED is higher in older age and in females as compared to males.

## Patients & methods

This prospective comparative study was carried out at Al-zahraa University Hospital, Cairo, Egypt and included 120 eyes of 60 patients with severe dry eye disease, age 23 - 67 years

## Exclusion Criteria:

- Patients with positive serology for hepatitis B ,C, or HIV.
- Patients with hemolyzed or lipaemic serum.
- Contact lens wearers.
- Eyelid abnormality interfere with blinking
- Past history of herpetic keratitis

**Our patients were divided into two groups according to treatment protocol:**

- **Group I:** 30 patients (60 eyes) treated with autologous serum eye drops.
- **Group II:** 30 patients (60 eyes) treated with autologous platelet rich plasma eye drops.

**All patients underwent a comprehensive ophthalmic examination, including:**

- Medical history, initial evaluation of the dry eye-related symptoms.
- BCVA.
- Slit-lamp examination (TBUT, corneal fluorescein staining, level of conjunctival hyperaemia).
- Schirmer's test (1).
- Conjunctival impression cytology (CIC).

The same tests as in the baseline visit were performed at each visit (2, 4, 6 weeks), except CIC which was only performed on the last visit.

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## Preparation Of Autologous Serum Eye Drops:

- The blood was first drawn from the recipient and allowed to clot in the absence of an anticoagulant.
- After clotting, the sample was centrifuged by the SW-12 centrifuge at 4000 RPM for 10 minutes at room temperature [20-40] C to separate serum from basal components with no haemolysis.
- After centrifugation, the serum was transferred into a sterile tube and diluted with a sterile saline solution to a 20% concentration, the final preparation was divided into 5-mL bottles.


SW-12 centrifuge, sterile vacutainer tube

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## Preparation Of Autologous Platelet Rich Plasma Eye Drops:

- The blood was first drawn from the recipient, placed in five vacutainer tubes [2-mL] containing anticoagulant, citrate dextrose solution, and centrifuged by the Hermle Z326K High-Speed Centrifuge [HERMLE Labortech-nik GmbH] at 1200 RPM for 10 minutes.

Hermle Z326K High-Speed Centrifuge, sterile vacutainer tube

- The upper two layers, the plasma and buffy coat layer, were separated and diluted to 20% with a sterile saline solution, the final preparation was divided into 5-mL bottles.

- The patients in both groups were instructed to store these bottles at -20°C until use, a maximum for 3 months.
- The bottles being used were maintained under refrigerated conditions at 4°C, a maximum for 7 days.
- The patients were instructed to use the eye drops 4-6 times daily.

# Results

**Table (1): Comparison between Group 1 and Group 2 according to Age and sex.**

| | | Group (1) | Group (2) | P –value |
|---|---|---|---|---|
| **Age** | | 50.53 ± 12.81 | 46.27 ± 12.93 | **0.204*** |
| **Sex** | **Male** | 9 (30.0%) | 8 (26.7%) | **0.774**** |
| | **Female** | 21 (70.0%) | 22 (73.3%) | |

*** t-test.**
**** Chi-Square test.**

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**Table (2): Mean Change 6 Weeks After Treatment In Group1 And Group 2**

| Variable | | Group (1) Mean± SD | Group (2) Mean± SD | p- value (Student's t-test) |
|---|---|---|---|---|
| **BCVA (log MAR)** | | | | |
| | Baseline | 0.15 ±0.22 | 0.15±0.25 | **0.969** |
| | Change after Treatment | 0.00 | -0.05* | **0.242** |
| | p- value (paired t-test) | **1.00** | **0.001** | |
| **Break up time test** | | | | |
| | Baseline | 3.73 ± 0.86 | 4.02 ± 0.65 | **0.044** |
| | Change after Treatment | 1.4* | 1.69* | **0.001** |
| | p- value (paired t-test) | **<0.001** | **<0.001** | |

| Variable | | Group (1) Mean± SD | Group (2) Mean± SD | p- value (Student's t-test) |
|---|---|---|---|---|
| **Schirmer's test** | | | | |
| | Baseline | 3.45±1.00 | 4.00±1.15 | **0.006** |
| | Change after Treatment | 1.23* | 2.33* | **<0.001** |
| | p- value (paired t-test) | **<0.001** | **<0.001** | |
| **Corneal fluorescein Staining** | | | | |
| | Baseline | 2.23 ± 0.46 | 1.97 ± 0.45 | **0.002** |
| | Change after Treatment | -0.21* | -1.32* | **<0.001** |
| | p- value (paired t-test) | **<0.001** | **<0.001** | |
| **Level of hyperemia** | | | | |
| | Baseline | 1.82 ± 0.62 | 2.13 ± 0.5 | **0.002** |
| | Change after Treatment | -1.29* | -1.7* | **0.275** |
| | p- value (paired t-test) | **<0.001** | **<0.001** | |

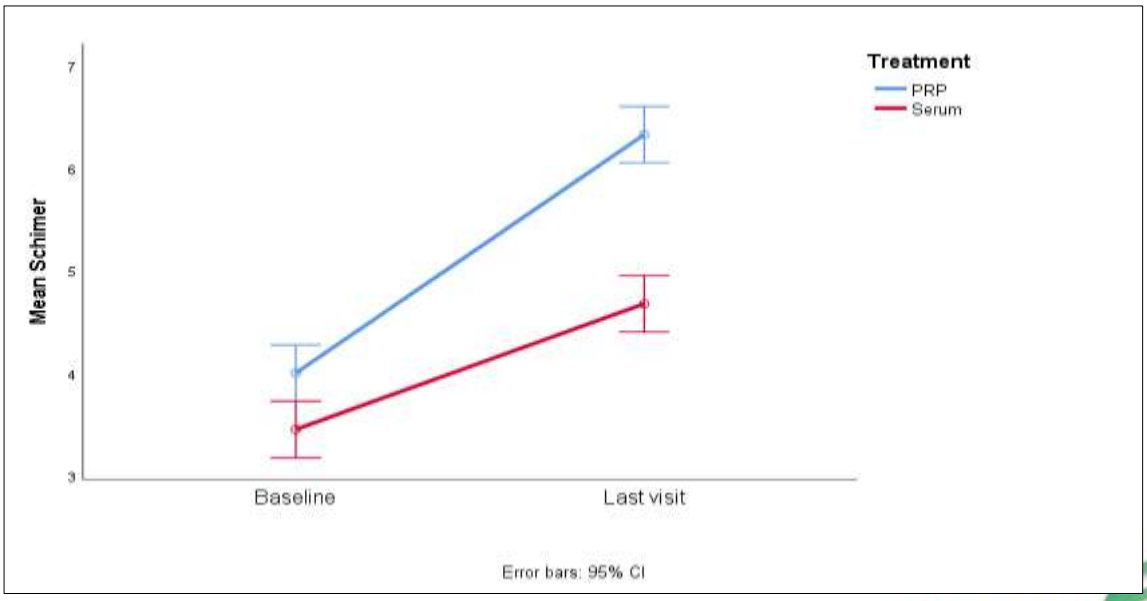


**Figure (1) : Change in Schirmer, comparison between Group 1 and Group 2.**

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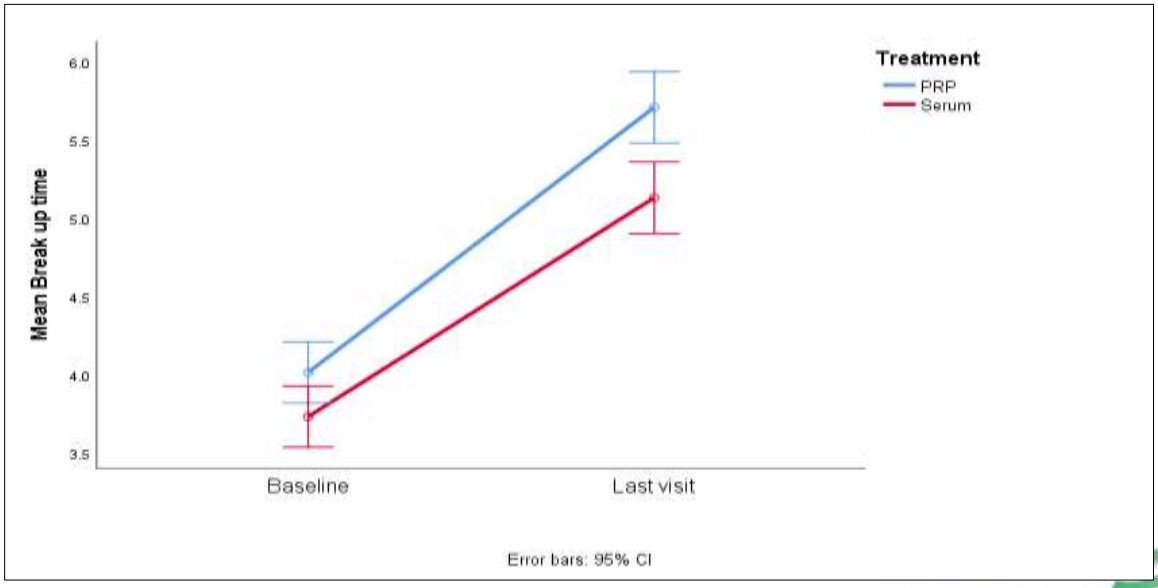



**Figure (2) : Change in BUT, comparison between Group 1 and Group 2.**

**Table (3): Conjunctival Impression Cytology Grading changes in group1 and group 2**

| CIC | | Group (1) No, % | Group (2) No, % | p- value (Linear-by-linear association test) |
|---|---|---|---|---|
| **Baseline** | | | | |
| | Grade 0 | 0 (0.0%) | 0 (0.0%) | **1.00** |
| | Grade 1 | 9 (15%) | 6 (10%) | |
| | Grade 2 | 24 (40%) | 30 (50%) | |
| | Grade 3 | 27 (45%) | 24 (40%) | |
| **Change after treatment** | | | | |
| | Grade 0 | 1 (1.7%) | 2 (3.3) | **0.04** |
| | Grade 1 | 30 (50%) | 40 (66.7) | |
| | Grade 2 | 29 (48.3) | 18 (30%) | |
| | Grade 3 | 0 (0.0%) | 0 (0.0%) | |
| **P-value (Marginal homogeneity test)** | | **<0.001*** | **<0.001*** | |

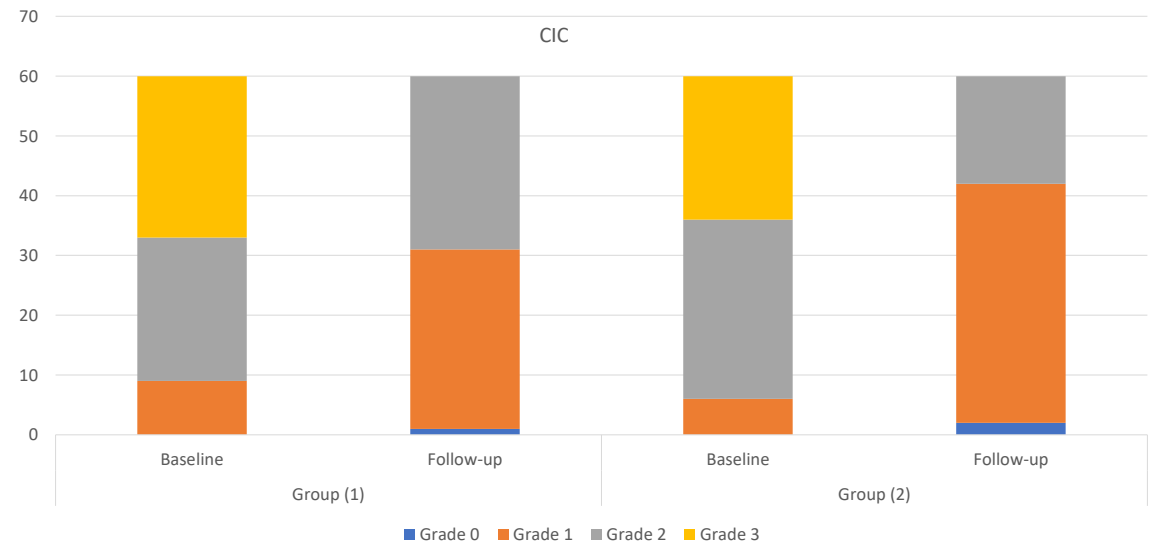
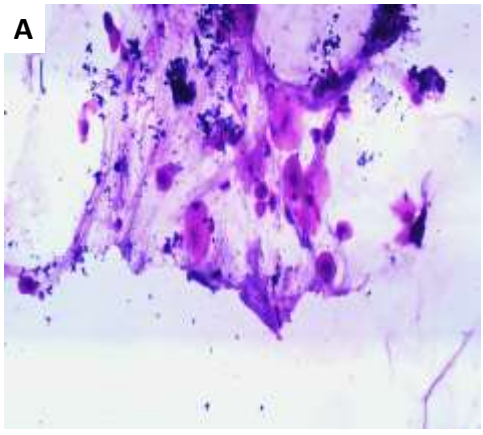
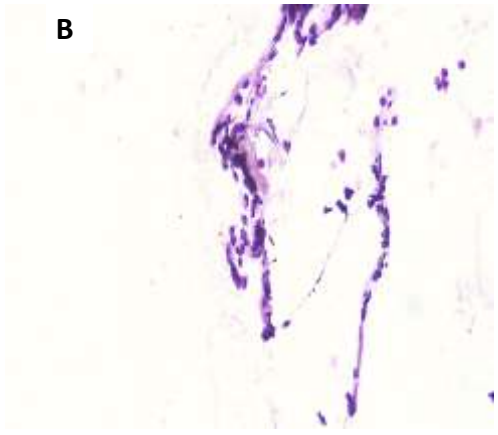
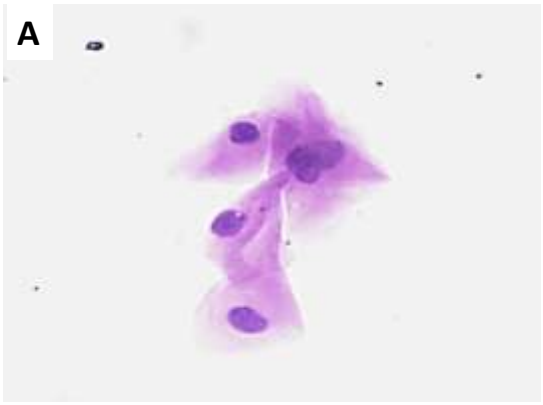


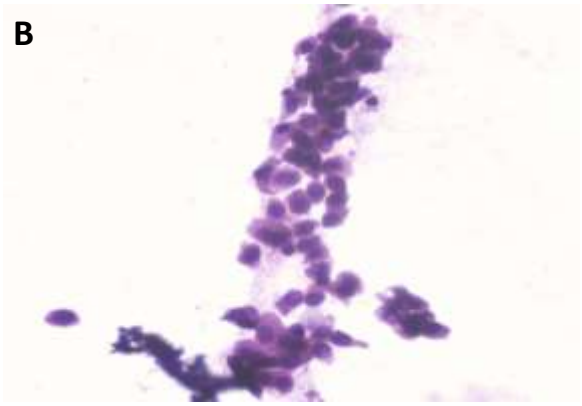

**Figure (3) : Comparison between Group 1 and Group 2 according to impression cytology at baseline visit and the last visit after treatment.**




**Conjunctival impression cytology**, right eye of a 37-year-old female patient with severe DED (schirmer's test 2mm, BUT 4 sec., grade 2 conjunctival hyperemia, grade 2 corneal staining), right eye before and after treatment with PRP. CIC showed improvement from Nelson Grade III (A) to Nelson Grade II (B).




**Conjunctival impression cytology**, left eye of a 50-year-old female patient with severe DED (schirmer's test 5mm, BUT 3 sec., grade 2 conjunctival hyperemia, grade 2 corneal staining), left eye before and after treatment with AS. CIC showed improvement from Nelson grade III (A) to Nelson grade II.

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- **In conclusion, PRP eye drops induce a more significant improvement in different dry eye signs than AS in the treatment of severe dry eye disease.**

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THANK YOU
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