

## THE TECHNIQUE OF IMPRESSION CYTOLOGY IN DRY EYE DISEASE: A REVIEW

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### ABSTRACT

**Background:** Impression cytology (IC) is a useful technique to assess the epithelial cells morphology changes in dry eye disease (DED). This review evaluated the IC techniques and their advantages in accessing DED.

**Methodology:** A literature search identifying IC technique articles in assessing the conjunctival morphology changes in DED via PubMed, Scopus and Springer search engines.

**Results:** A total of 33 articles identified as relevant to the search criteria. The superior bulbar conjunctiva was the most selected location to collect IC specimens. The most commonly used filter material was cellulose acetate with 0.22 µm pore size. The fixation frequently performed using a mixture of ethyl alcohol, formaldehyde, and glacial acid with a ratio of 20:1:1. The specimens were commonly stained with periodic acid Schiff (PAS) and counterstained with haematoxylin and eosin. The specimens were viewed under a light microscope to quantify the goblet cell density, the cytoplasm diameter, nucleus to the cytoplasm ratio of non-secretory cells and presence of nuclear chromatin. The grading was carried out using validated grading scales such as the Nelson scale.

**Conclusion:** This review concluded that cellulose acetate paper of a 0.22 µm pore size is sufficient for specimen collection observing cellular morphology changes. The fixation using ethyl alcohol, formaldehyde and glacial acid mixture (20:1:1) works well with conjunctival cell. The PAS staining, haematoxylin and eosin as staining enable highlighting all the epithelial cell and goblet cell structures. Nelson's grading is suggested for grading purpose to assess the conjunctival epithelial morphology in DED studies.

**Keywords:** impression cytology, dry eye