

<b>DEWS</b>	<b>DRY EYE: DIAGNOSTIC TEST TEMPLATE</b>	
<b>RAPPORTEUR</b>	Michael A. Lemp	Rev: 15 March 2006
<b>TEST</b>	<b>Tear osmolarity</b>	
<b>TO DIAGNOSE</b>	<b>Global test for dry eye</b>	
<b>VERSION of TEST</b>	Vapor pressure osmometry	
<b>DESCRIPTION</b>	A cellulose acetate disc is placed between the lower lid and cornea and allowed to absorb tears. The disc is then inserted into a chamber, which is sealed and cooled below the sample dew point. Because of the latent heat of the water, vapor condenses upon a thermocouple until the temperature stabilizes at the dew point which is related to the osmolality.	
<b>CONDUCT of TEST</b>	<ol style="list-style-type: none"> <li>1. Calibrate machine</li> <li>2. Collect tears (upwards of microliters required)</li> <li>3. Place disc in chamber</li> <li>4. Wait</li> </ol>	
<b>Web Video</b>	Not available	
<b>Materials:</b>	<ul style="list-style-type: none"> <li>• Osmometer [eg. Wescor]</li> <li>• Cellulose acetate disc</li> </ul>	
<b>Standardization</b>	<p>Time of day [<input type="checkbox"/>] Temperature [<input type="checkbox"/>] Humidity [<input type="checkbox"/>] Air speed [<input type="checkbox"/>] Illumination [<input type="checkbox"/>]. Assumed to influence</p> <p>Other:</p> <p>Condensation within the chamber may compromise test, so humidity may be a factor in certain places.</p> <p>White et. al. Showed that use of a slit lamp has upwards of a 7 mOsm/kg effect on the value of osmolality due to the induction of reflex tearing.</p> <p>Overstimulation during collection is discouraged. Reflex tears have far lower osmolality (<math>\approx 5\%</math>, Nelson, 1986) than basal tears.</p>	<p>Pensyl 1999</p> <p>White et al. 1993</p> <p>Nelson et al. 1986</p>
<b>Repeatability</b>	<p>Intra-observer agreement. [ <input type="checkbox"/> ]</p> <p>Inter-observer agreement. [ <input type="checkbox"/> ]</p>	
<b>Sensitivity</b>	<b>(true positives)</b> [ <input type="checkbox"/> ]	
<b>Specificity</b>	<b>(100 – false positives)</b> [ <input type="checkbox"/> ]	
<b>Test problems</b>	Collection methodology will likely induce reflex tearing, which compromises the diagnostic value of this test. Vapor pressure methods are unable to reliably measure volumes below one microliter.	Pensyl 1999
<b>Test solutions</b>	None.	
<b>FORWARD LOOK</b>	Unlikely that vapour pressure osmometers will migrate to a clinical setting	

## References

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Pensyl CD, Benjamin WJ. Vapor pressure osmometry: minimum sample microvolumes. *Acta Ophthalmol Scand* 1999;77(1):27-30.

White KM, Benjamin WJ, Hill RM. Human basic tear fluid osmolality. I. Importance of sample collection strategy. *Acta Ophthalmol (Copenh)* 1993;71(4):524-9.