

<b>DEWS</b>	<b>DRY EYE: DIAGNOSTIC TEST TEMPLATE</b>	
<b>RAPPORTEUR</b>	James P. McCulley, M.D.	8 <sup>th</sup> Nov2004
<b>TEST</b>	<b>Meibomian lipid chemistry</b>	
<b>TO DIAGNOSE</b>	Lipid biochemical abnormalities of meibomian secretions as surrogate for tear film lipid layer abnormalities	REFERENCES (See below)
<b>VERSION of TEST</b>	[1]	
<b>DESCRIPTION</b>	Harvesting of expressed meibomian secretions provides a sufficient quantity of lipid to be analyzed biochemically.	
<b>CONDUCT of TEST</b>	After topical anesthesia, a lid conformer is placed on the tarsal conjunctival side of the lid and a cotton-tipped applicator is used to express the meibomian secretions, which are then collected with a sterile platinum spatula. The lipids are then placed in an appropriate solvent system for further analysis of nonpolar as well as polar lipids.	
<b>Web Video</b>	Not available	
<b>Materials:</b>	<ul style="list-style-type: none"> <li>• Topical anesthetic, e.g. lidocaine 2%</li> <li>• Lid conformer</li> <li>• Cotton-tipped applicator</li> <li>• Sterile platinum spatula</li> <li>• Non-lipid-contaminated or altering vial with screw cap containing solvent.</li> </ul>	
<b>Variations of technique</b>		
<b>Standardization</b>	Time of day [ ] Temperature [ ] Humidity [ ] Air speed [ ] Illumination [ ] Other:[None ]	
<b>Diagnostic value</b>	This version : [ I ] Effective biochemical analysis, predicts clinical appearance, and 90-95% of samples. Changes in polar lipids have been associated with aqueous deficient dry eye, as has phosphatidic acid. Increased oleic acid has been specifically associated with meibomian seborrhea. Other correlations can be discussed, but are of less apparent clinical value, with the exception that the lipids of all patients with chronic blepharitis contain cholesterol compounds, whereas normals segregate into those with and without cholesterol –containing compounds. I cannot envision at this time that lipid biochemical analysis will be a useful clinical tool; however, it holds great promise for the development of an understanding of pathophysiology.	
<b>Repeatability</b>	Intra-observer agreement. [NA] Inter-observer agreement. [NA]	
<b>Sensitivity</b>	[NA]	
<b>Specificity</b>	[NA]	
<b>Other Stats</b>	See references.	
<b>Test problems</b>	There are tremendous technical problems in dealing with individual patient lipid biochemical analysis. These are	

	especially acute in assessing polar lipids.	
<b>Test solutions</b>	We are in the process of evaluating different solvent systems and different methods of assessing the lids beyond HPLC, GC-MS, MRI, and LCMS.	
<b>FORWARD LOOK</b>	I envision being able to gain additional insights into the pathophysiology of various forms of blepharitis and different types of dry eyes through the further improvement in sophistication of the techniques in assessing meibomian lipids. The direct analysis of primary subjects should be of great value, as well as the change in the lipids with various forms of therapy are apt to provide insights not only into the pathophysiology of the original disease, but mechanisms of therapeutic agents.	
<b>Glossary</b>		

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