BÜHLMANN GanglioCombi® MAG ELISA

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What is an Autoimmune Neuropathy Event?

An autoimmune neuropathy event is often the etiology of a complex and heterogeneous grouping of neurological disorders. Anti-neural antibody presence can often be measured. Some of the antibodies have a widely appreciated clinical significance.[2] Autoimmune activity may point to the underlying pathology and the primary findings are often based on clinical, electrophysiological and immunological features of the syndrome. Autoimmune neuropathies are unique because they are responsive to treatment and this leads to improvement in biological function.[4,6] Accurate test results are essential for this process and it is for these reasons that research in the field of autoimmunity should be a continued focus, and cause for further exploration.

The Role of Antigenic Targets

Antigenic targets are glycolipids (*i.e.* gangliosides) and glycoproteins *(i.e*., myelin associated glycoproteins, MAG). These targets are inserted in the peripheral nerves either in the myelin or in the axolemma. Acute polyneuropathies are usually associated with immunoglobulin (IgG) antibodies rather than chronic neuropathies which are associated with IgM.[1]

Missing Links in Current Neuroimmunology Testing

There are missing links in currently available and most commonly used testing methods to study and evaluate underlying autoimmune neuropathies. Many assays in the market do not fulfill the needs of different laboratories in terms of autoantibody detection or desired method of testing (*i.e.* Westernblot is one of the only alternative test methods to determine anti-MAG antibodies).

BÜHLMANN GanglioCombi® MAG ELISA

BÜHLMANN GanglioCombi® MAG ELISA is the first and only assay in the market to provide the possibility to test for gangliosides and MAG on one plate from the same sample. BÜHLMANN GanglioCombi™ MAG ELISA contains all 3 enzyme labels for full flexibility and offers a simple method of testing for semi-quantitative and objective results. This utility allows the means to identify the autoimmune background of the most prevalent anti-neural antibodies. Due to the often overlapping phenotypic presentations, the benefit of obtaining both a MAG and ganglioside result in one test allows for a simplified and comprehensive measurement. The objective results using the BÜHLMANN assay can be easily categorized into a titre category, which is negative, positive or strongly positive.

Applications

Due to the high sensitivity of the BÜHLMANN GanglioCombi® MAG ELISA, and its combination of relevant neural antigens on one microtiter plate, it is the ideal tool:

- for studying acute and chronic autoimmune peripheral neuropathies from one single sample.
- to evaluate complex patterns of autoimmune neuropathies.

Differentiation

- Due to the unique combination of anti-MAG and relevant anti-Ganglioside antibodies on the BÜHLMANN GanglioCombi® MAG ELISA, along with 3 enzyme isotypes, it allows for differentiation of relevant antibodies in the study of pathological samples.
- Due to the high prevalence of anti-MAG antibodies (~70%), among positive anti-neural antibody samples, in autoimmune neuropathies, confirming the presence is essential. Data shows that **15% of sera that are**

originally requested for ganglioside testing turn out positive for MAG . Conversely, a significant proportion of samples (~15%) sent only for anti-MAG testing, **turn out positive for the relevant anti-ganglioside antibodies** offered in the BÜHLMANN kit **(Fig. 1).[3,5] Therefore, BÜHLMANN GanglioCombi® MAG ELISA is an ideal test to evaluate demyelinating neuropathies with an IgM monoclonal gammopathy.**

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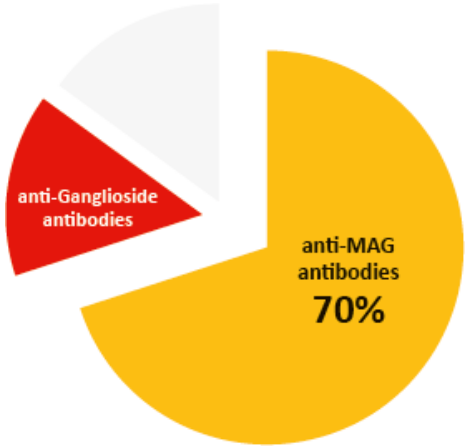

Figure 1

GanglioCombi® MAG ELISA Kit

Reagents	Quantity	Code	Reconstitution
Microtiter Plate precoated with gangliosides and MAG analogue	2 x 12 x 8 wells	B-GCM-MP	Ready to use
Plate Sealer	6 pieces		
Wash Buffer Concentrate (10X) with preservatives	2 bottle 100 ml	B-GCO-WB	Dilute with 900 ml of deionized water
Incubation Buffer with preservatives	1 bottle 100 ml	B-GCO-IB	Ready to use
Calibrator Lyophilized with preservatives	1 vial	B-GCO-CA	Add 1.5 ml of Incubation Buffer
Negative, Low and Medium Control Lyophilized with preservatives	3 vials	B-GCO-CONSET	Add 1.5 ml of Incubation Buffer
Enzyme Label IgG/IgM Mix Anti-human IgG and IgM Ab conjugated to HRP in a protein-based buffer with preservatives	2 vials 11 mL each	B-GCO-ELGM	Ready to use
Enzyme Label IgG Anti-human IgG Ab conjugated to HRP in a protein-based buffer with preservatives	1 vial 11 ml	B-GCO-ELG	Ready to use
Enzyme Label IgM Anti-human IgM Ab conjugated to HRP in a protein-based buffer with preservatives	1 vial 11 ml	B-GCO-ELM	Ready to use
TMB Substrate TMB in citrate buffer with H_2O_2	2 vials 11 ml	B-TMB	Ready to use
Stop Solution 0.25 M sulfuric acid	2 vials 11 ml	B-STS	Ready to use **Corrosive agent**

*Figure **1.** adapted from Kuijf M. et al., 2009 and Stork A. et al., 2014. BÜHLMANN anti-MAG autoantibody ELISA detects anti-MAG autoantibodies in >70% of patients with demyelinating polyneuropathy and IgM monoclonal gammopathy (Kuijf M. et al., 2019). Conversely, anti-Ganglioside antibodies are measured in 15% of patients which are negative for anti-MAG antibodies (Stork A. et al., 2014)*

Conclusions

BÜHLMANN GanglioCombi® MAG ELISA is an incredible means for researchers, providing a more valuable, simple, cost-effective alternative to existing methods. It is the only commercially available assay that combines gangliosides and MAG in one assay which allows for a targeted tool to study the most prominent immune-mediated neuropathies. This assay takes neuro-immunological testing to the next level and may revolutionize the study of autoimmunity and anti-neural antibodies providing full flexibility for laboratories and maximal information from a single sample.

References

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3. Kuijf M. et al., Detection of anti-MAG antibodies in polyneuropathy associated with IgM monoclonal gammopathy; Neurology; **2009**; 688-695.
4. Latov N., Diagnosis and treatment of chronic acquired demyelinating polyneuropathies; Nat Rev Neurol; **2014**(10); 435-446.
5. Stork A., et al., Prevalence, specificity and functionality of anti-ganglioside antibodies in neuropathy associated with IgM monoclonal gammopathy; **2014**(268); 89-94.
6. Willison H.J. et al., Guillain-Barré Syndrome; the Lancet; **2016**; 1-11.