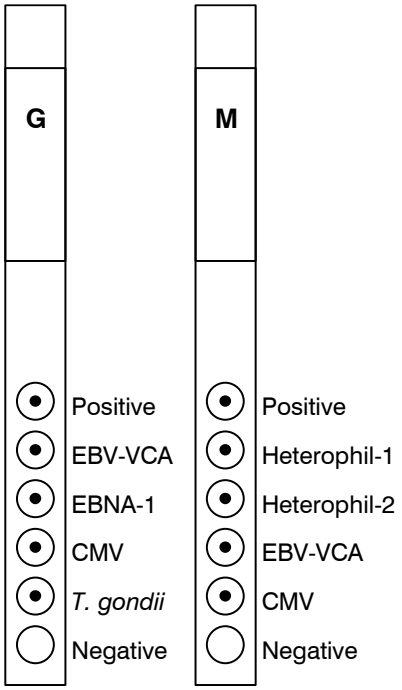
MONO-G / MONO-M Screening Panels

The ***ImmunoDOT*** MONO–G and ***ImmunoDOT*** MONO–M Screening Panels are enzyme immunoassays (EIA) tests which determine the presence of heterophil antibodies and antibodies to Epstein-Barr virus (EBV), Cytomegalovirus (CMV), and *Toxoplasma gondii* in serum.

Expected Results

Mononucleosis (MONO) is characterized by malaise, fever, hepatosplenomegaly, lymphadenopathy, and abdominal discomfort. Mononucleosis has multiple etiologies; the most common infectious etiologic agent is Epstein–Barr virus (EBV). Cytomegalovirus (CMV) and *Toxoplasma gondii* infections also may cause mononucleosis syndrome. MONO is commonly diagnosed serologically by measuring antibodies to the Paul–Bunell heterophil antigen, but agent specific assays provide more comprehensive and accurate laboratory support for diagnosis. The MONO-M Test detects heterophil antibodies which only appear during EBV infections and disappear as the disease wanes. It also detects the specific IgM antibody response to EBV viral capsid antigen (VCA) and CMV. The MONO-G Test detects the specific IgG response to EBV Viral Capsid Antigen (VCA), CMV, and *Toxoplasma gondii.* The combination of the MONO-M and MONO-G tests provides a complete and comprehensive diagnosis of mononucleosis syndrome.



EBV (Heterophil, VCA, and EBNA): The heterophil assay (IgM only) detects EBV infections, but does not identify mononucleosis caused by other agents. Heterophil antibodies are present in about 85-90% of the adolescent or adult EBV cases at some point during acute illness, but occur in only 50% of the sera from two to five year old children with recent EBV infections.[1,2] VCA IgG and IgM occur almost simultaneously, appearing within 2-3 weeks of onset and peak at 4-6 weeks. VCA IgM disappears rapidly, while VCA IgG response remains a lifetime. Anti-EBNA are absent during the acute phase, but EBNA IgG appears beginning 2-3 months after onset and remains a lifetime.[1,3]

CMV: CMV causes essentially the same IM syndrome as EBV; however, there is no heterophil antibody response. The occurrence of primary CMV infections is related to socioeconomic status; the lower the socioeconomic status, the earlier one is exposed to the virus. CMV prevalence among blood donors is 24% to 75%. Recent CMV infection is associated with appearance of CMV IgM and/or isolation of CMV virus. To assure serological diagnosis, it is recommended that both IgM and IgG be reactive.

T. gondii: Toxoplasmosis causes a lymphadenopathy similar to IM syndrome, although “atypical lymphocytes” commonly associated with IM syndrome areabsent. Like CMV, toxoplasma IgM and IgG indicates a recent infection while IgG alone indicates past infection. Since it is reported that the ELISA IgM method yields false positives,[4] MONO-G measures only the IgG response and recommends that IgG positive sera be tested using a specific reference IgM procedure (i.e. IFA).

Principle

The ***ImmunoDOT*** MONO–M and MONO–G Tests utilize an EIA dot technique for the detection of antibodies. The antigens are dispensed as discrete dots onto a solid membrane. After adding specimen to a reaction vessel, an assay strip is inserted, allowing patient antibodies reactive with the test antigen to bind to the strip’s solid support membrane. In the second stage, the reaction is enhanced by removal of non-specifically bound materials. During the third stage, alkaline phosphatase-conjugated anti-human antibodies are allowed to react with bound patient antibodies. Finally, the strip is transferred to enzyme substrate reagent which reacts with bound alkaline phosphatase to produce an easily seen, distinct blue-violet spot.

Performance and Interpretation (See package insert for complete discussion)

	EBV Interpretation				CMV Interpretation	
	MONO–M		MONO–G			
	Heterophil	VCA IgM	VCA IgG	EBNA IgG	CMV IgM	CMV IgG
EBV Mononucleosis	+	+ or –	+ or –	–	–	+
CMV Mononucleosis	–	+ or –	+ or –	+ or –	+	+
Past Infection	–	–	+	+	–	+
Negative Infection	–	–	–	–	–	–

Procedural Summary

1. Put appropriate reagents in Reaction Vessels # 1-4 in workstation.
2. Add 10 μL patient serum to Reaction Vessel #1.
3. Prewet Assay Strip in distilled water. Place in Reaction Vessel #1, mix, and incubate 60-90 minutes.
4. Wash in distilled water.
5. Place Assay Strip into Reaction Vessel #2, mix, and incubate 5 minutes.
6. Wash in distilled water.
7. Place Assay Strip into Reaction Vessel #3, mix, and incubate 30-40 minutes.
8. Wash and soak in distilled water for 5 minutes.
9. Place into Reaction Vessel #4, mix, and incubate for 5 minutes.
10. Wash in distilled water.
11. Blot and allow Assay Strip to dry. Read results.

Product Description

Product Description	Quantity	GenBio Product No.
MONO–G	25 test kit	6015
	100 test kit	6019
MONO–M	25 test kit	6025
	100 test kit	6029
MONO–G Positive Control Serum	10 test	3908
MONO–M Positive Control Serum	10 test	3909
Negative Control Serum	10 test	3920
Workstation 4 place (120V)*	4 patient	4011
Workstation 12 place (120V)*	12 patient	4090

* International voltages available

References

1. Sumaya, C.V., and Ench, Y., Epstein-Barr Virus Infectious Mononucleosis in Children. II Heterophil Antibody and Viral-Specific Responses, Pediatrics, 75 (6): 1011-1019, June 1985.
2. Lennette, ET, Manual of Clinical Microbiology, 4th Ed (Lennette, Balows, Housler, and Shadomy, eds) pp 728-732, ASM Press, Washington DC (1985)
3. Evans, AS, Medical Virology VII (de la Maza and Peterson, eds) pp 57-97, Elsevier, New York, NY (1988)
4. Liesenfeld, Oliver, et.al., False-Positive Results in Immunoglobulin M (IgM) Toxoplasma Antibody Tests and Importance of Confirmatory Testing, Journal of Clinical Microbiology, 35 (1): 174-178, January 1997.

GenBio

Phone 800-288-4368 • FAX 858-592-9400 • e-mail genbio@genbio.com • Website http://www.genbio.com
15222 Avenue of Science, Suite A • San Diego, California 92128