# Fungitell® Assay

Serum test for (1→3)-β-D-Glucan
FDA-Cleared, 510(k) *in vitro* diagnostic

# Invasive Fungal Disease

## (1→3)-β-D-Glucan in Pathogenic Fungi

Most pathogenic fungi* have (1→3)-β-D-Glucan in their cell walls. Minute quantities are released into the circulation during infection. Detection of elevated levels of (1→3)-β-D-Glucan is an aid to the presumptive diagnosis of invasive fungal disease in at risk patients.

## Earlier Support for Diagnosis

Multiple studies[1,2,3,4,5] have shown glucan to become elevated well in advance of conventional clinical signs and symptoms. Delayed diagnosis and therapy of invasive fungal disease is associated with increased mortality[8].

## Rapid Results

The Fungitell® assay is performed entirely within a microplate well without washing steps. The assay provides results within 2 hours.

## Diagnostic Performance

Multiple studies[1,2,3,4,5] in diverse patient groups have shown sensitivities from 70 –100% and high negative predictive values. Recent studies suggest diagnostic utility in *Pneumocystis jirovecii* pneumonia[6,7].

The Fungitell® assay is a highly sensitive, microplate-based test that detects (1→3)-β-D-Glucan in serum. (1→3)-β-D-Glucan is a cell wall constituent of most medically important fungi including *Candida* and *Aspergillus*.* (1→3)-β-D-Glucan is normally found at low levels in the blood of healthy humans. In at risk patients, serum (1→3)-β-D-Glucan values of at least 80 pg/mL, are highly associated with invasive fungal disease. Conversely, low levels of (1→3)-β-D-Glucan have a high negative predictive value for invasive fungal disease.

(1→3)-β-D-Glucan detection is not subject to the usual interferences. It is not suppressed by anti-fungal therapy, nor is the test cross-reactive with other polysaccharides.

**See item i under Warnings, Precautions and Limitations (on reverse)*


1.Odabasi Z., Mattiuzzi G., Estey E., Kantarjian H., Saeki F., Ridge R., Ketchum P., Finkelman M., Rex J. and Ostrosky-Zeichner L. (2004) Beta-D-Glucan as a diagnostic adjunct for invasive fungal infections: Validation, cutoff development, and performance in patients with Acute Myelogenous Leukemia and Myelodysplastic Syndrome. Clinical Infectious Diseases. 39:199-205.

2. Ostrosky-Zeichner L., Alexander B., Kett D., Vazquez J., Pappas P., Saeki F., Ketchum P., Wingard J., Schiff R., Tamura H., Finkelman M., and Rex J. (2005) Multicenter clinical evaluation of the (1→3)-β-D-Glucan assay as as aid to diagnosis of fungal infections in humans. Clin. Inf. Dis. 41: 654-659.

3. Pazos C., Ponton J., and Del Palacio A. (2005) Contribution of (1→3)-β-D-Glucan chromogenic assay to diagnosis and therapeutic monitoring of invasive aspergillosis in neutropenic adult patients: A comparison with serial screening for circulating galactomannan. J. Clin. Micro. 43(1): 299-305.

4. Pazos, C., Moragues, M-D., Quindos, G., and del Palacio, A. (2006) Diagnostic potential of (1→3)-β-D-glucan and anti-Candida albicans germ tube antibodies for the diagnosis and therapeutic monitoring of invasive candidiasis in neutropenic adult patients. Re. Iberoam Micol. 23: 209-215.

5. Ellis, M., Ramadi, B., Finkelman, M., Hedstrom, U., Kristenson, J., Ali-Zadeh, H., and Klingspor, L. (2007) Assessment of the clinical utility of serial β-D-Glucan concentrations in patients with persistent neutropenic fever. J. Med. Microbiol. 57: 287-95.

6. Marty, F. M., Koo, S., Bryar,and J., Baden, L.R. (2007) (1→3)-β-D-Glucan assay positivity in patients with *Pneumocystis (carinii) jirovecii* pneumonia. Ann. Int. Med. 147: 70-72.

7. Persat F, Ranque S, Derouin F, Michel-Nguyen A, Picot S, Sulahian A (2008) Contribution of the (1→3)-β-D-Glucan Assay for the Diagnosis of Invasive Fungal Infections. J. Clin. Micro. 36: 1009-1013.

8. Morrell, M., Fraser, V., and Kollef, M. (2005) Delaying the empiric treatment of Candida bloodstream infection until positive culture results are obtained: a potential risk factor for hospital mortality. Antimicrob. Agents. Chemother. 49: 3640-3645.



ASSOCIATES OF CAPE COD INCORPORATED
*Specialists in Endotoxin and Glucan Detection*

Corporate Headquarters
Associates of Cape Cod, Inc.
124 Bernard E. Saint Jean Drive,
East Falmouth, MA 02536
T (508) 540–3444
F (508) 540–8680
www.acciusa.com

UK Office
Associates of Cape Cod Int'l Inc.
Deacon Park, Moorgate Road,
Knowsley, Liverpool L33 7RX
United Kingdom
T (44) 151-547-7444
F (44) 151-547-7400

European Office
PYROQUANT DIAGNOSTIK GmbH
Opelstrasse 14,
D-64546 Morfelden-Walldorf,
Germany
T (49) 61 05-96 10 0
F (49) 61 05-96 10 15



PN001269 Rev006


CE

ISO 13485:2003 MEDICAL DEVICES

# Fungitell® Assay

Serum test for (1→3)-β-D-Glucan
FDA-Cleared, 510(k) *in vitro* diagnostic


The mortality rate for patients with invasive fungal infections (IFI) is especially high in immunosuppressed patient populations.

*Barnes J.A.C. 61: Suppl. 1, i3-i6 (2008)*



*Photography by D.A. Sutton*

## Product Information

### Principal of the Fungitell® Reagent

Fungitell® is a (1→3)-β-D-Glucan specific *Limulus* amebocyte lysate (LAL) reagent containing a chromogenic peptide substrate. (1→3)-β-D-Glucan in the sample causes activation of serine proteases. An activated protease cleaves *p*-nitroaniline (*p*NA) from the peptide substrate and the free *p*NA is measured at 405 nm.

### Materials Supplied with the Kit

- 2 vials Fungitell® Reagent
- 2 vials Pyrosol® Reconstitution Buffer[b]
- 2 vials Glucan Standard
- 2 bottles Reagent Grade Water,[b] 20 mL
- 1 vial KCl[b]
- 1 vial KOH[b]
- 2 96-well microplates[b]

### Storage Conditions

Store all reagents at 2-8°C in the dark. Reconstituted Fungitell® reagent should be stored at 2-8°C and used within 2 hours. Alternatively, reconstituted Fungitell® reagent can be frozen at -20°C for 20 days, thawed once and used.

### Materials Required but not Supplied

All materials and glassware must be free of interfering glucan. Dry heat depyrogenation is effective in eliminating interfering levels of (1→3)-β-D-Glucan from glass surfaces. Purchase supplies from a supplier that will certify the materials free of interfering glucan.

- Pipette tips (250 µL; 1000 µL)[c] and repeating pipette & tips
- Test tubes for sample dilution (13 x 100 mm)[c]
- Glass pipettes – not plastic
- Parafilm®
- Incubating plate reader capable of reading at 405 nm with appropriate kinetic software for determination of $V_{mean}$[c]
- Vortex mixer

### Order Information

**FT001** Fungitell® Kit-110 test wells

**Warnings, Precautions and Limitations (see instructions for use for details):**

i. *Cryptococcus*, Zygomycetes (such as *Absidia, Mucor* and *Rhizopus*) and *Blastomyces dermatitidis* (infective yeast form) are known to have little or no (1→3)-β-D-glucan and thus, glucan is not detected during infection with these organisms.

ii. The tissue locations of fungal infection and encapsulation may affect the serum concentration of (1→3)-β-D-Glucan.

iii. Some individuals have elevated levels of (1→3)-β-D-Glucan that fall into the indeterminate zone of 60 – 79 pg/mL. In such cases, additional testing is recommended.

iv. Test levels were established in adult subjects. Infant and pediatric normal levels approach those of adults. Data for neonates, and infants less than six months, are lacking.

v. Off-color or turbid samples such as those that are grossly hemolyzed, lipemic, or contain excessive bilirubin may cause interference.

vi. Samples obtained by heel or finger stick methods are unacceptable as the alcohol-soaked gauze used to prepare the site and/or skin surface-pooling of blood may contaminate the specimens.

vii. Surgical gauzes and sponges can leach high levels of (1→3)-β-D-Glucan and may contribute to a transient positive result for the Fungitell assay.

viii. The serum of hemodialysis patients may contain high levels of (1→3)-β-D-Glucan when certain cellulose dialysis membranes are used.

ix. In performing the test, great care must be taken to avoid contamination.

x. The use of Fungitell® for purposes other than those described in the Intended Use section of instructions for use of the product is neither recommended nor supported by Associates of Cape Cod, Inc.

*a. Lin S.* et al., *(2001) Clin. Infect. Dis. 32:358; b. Products are free of interfering glucans; c. Available from Associates of Cape Cod, Inc.*

ASSOCIATES OF CAPE COD INCORPORATED
*Specialists in Endotoxin and Glucan Detection*


Corporate Headquarters
Associates of Cape Cod, Inc.
124 Bernard E. Saint Jean Drive,
East Falmouth, MA 02536
T (508) 540–3444
F (508) 540–8680
www.acciusa.com

UK Office
Associates of Cape Cod Int'l Inc.
Deacon Park, Moorgate Road,
Knowsley, Liverpool L33 7RX
United Kingdom
T (44) 151-547-7444
F (44) 151-547-7400

European Office
PYROQUANT DIAGNOSTIK GmbH
Opelstrasse 14,
D-64546 Morfelden-Walldorf,
Germany
T (49) 61 05-96 10 0
F (49) 61 05-96 10 15