Wako ß-glucan test

Better detection and diagnosis of fungal infections

Beta-glucan tests are proving to be pivotal in the better detection and diagnosis of fungal infections. As a robust complimentary test for traditional testing techniques and biomarkers, it is helping clinicians deliver rapid results and offering greater reassurance in more accurately identifying such infections. ß-glucan testing, which is an in vitro diagnostic test, is regularly used at University Hospitals Leuven in Belgium. 'Although it is not a specific test for a particular fungal disease, the value is its use in conjunction with other conventional tests, such as microscopy and culture, and biomarker detections,' explained Professor Katrien Lagrou, head of the Molecular Diagnostics department at the university.

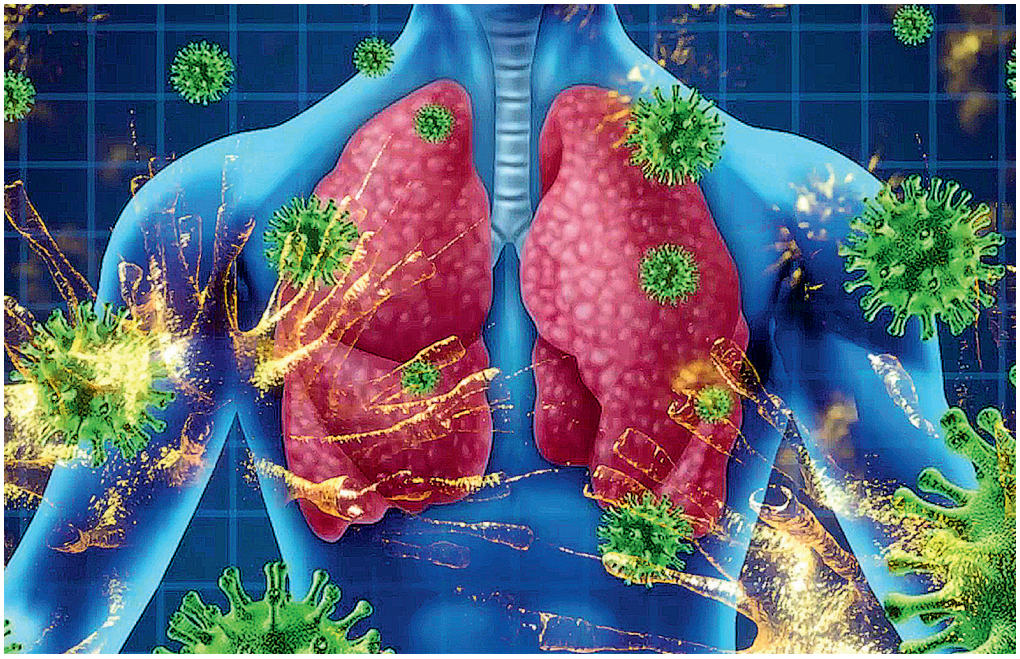
Report: Mark Nicholls

Invasive fungal diseases are a major worldwide health problem and affect immunocompromised patients, such as those undergoing intensive-care treatment, and people with chronic disorders – particularly lung diseases. Most infections are caused by Aspergillus, Candida and Pneumocystis jirovecii, with early recognition and diagnosis crucial to improve patient outcomes. Guidelines from the European Confederation of Medical Mycology for Candida – which will be updated imminently – and Aspergillosis, recommend the use of a ß-glucan test for their detection.

In addition, PCR (polymerase chain reaction) is the first line test in non-HIV Pneumocystis jirovecii Pneumonia but it has drawbacks that the ß-glucan test can help overcome. 'It's not always possible to have a bronchoalveolar fluid sample to perform a PCR test and we also know the PCR test is supersensitive and may detect colonisation and not infection, said Lagrou, who also heads the Department of Microbiology, Immunology and Transplantation and also heads the National Reference Centre for Mycosis at University Hospitals of Leuven.

'If it's not possible to conduct bronchoalveolar lavage, the ß-glucan test may be used to evaluate the likeness of Pneumocystis infection. In addition, this test may also be of value in the discrimination between infection and colonisation.' What it offers as a complimentary test, she added, is an extra level of reassurance – either to support a diagnosis or exclude the diagnosis.

Patients with an impaired immune system are at risk of invasive fungal infections



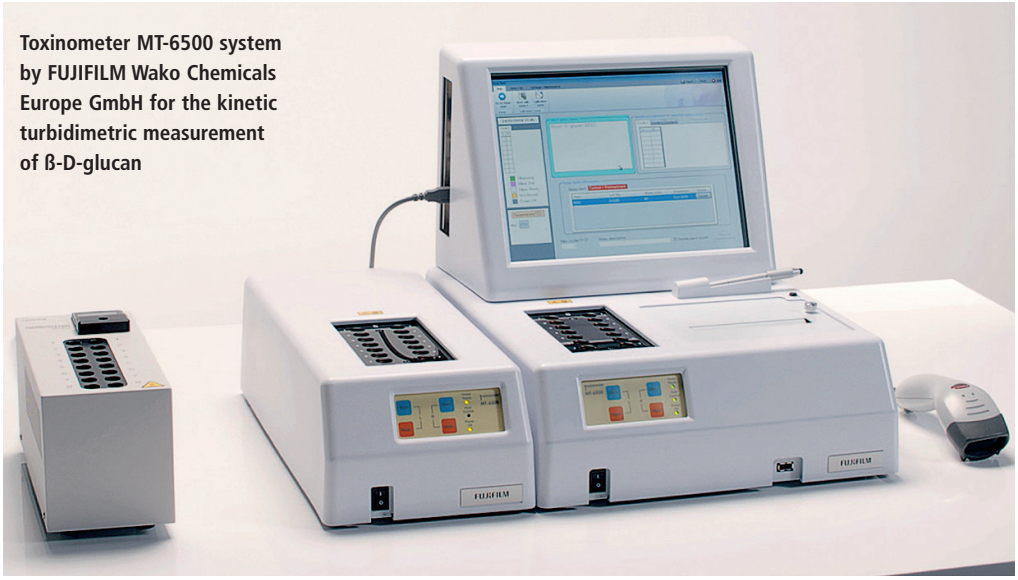
Professor Katrien Lagrou is Head of the Department of Microbiology, Immunology and Transplantation at the University of Leuven and also heads the National Reference Centre for Mycosis. She is also Professor at the Faculty of Medicine of the Catholic University of Leuven. Her major interest is the diagnosis of fungal and viral infections in severely immunocompromised patients, with a focus on invasive pulmonary aspergillosis. Lagrou also presides over the Belgian Society of Human and Animal Mycology and is former General Secretary of the European Confederation of Medical Mycology.

In vitro diagnostic test

'The diagnosis of fungal infection is complicated and you need to put together different tests and they all have their own value and they do provide complimentary information, and the ß-glucan test is one of those tests.'

The Wako ß-glucan test – evaluated at the Leuven centre – is an in vitro diagnostic test for the quantitative determination of (1→3)-ß-D-glucan in serum or plasma and a marker of invasive fungal infections. The assay is performed on the Toxinometer MT-6500 device developed by FUJIFILM Wako Pure Chemical Corporation.

The test may also have a role with Covid-19, where invasive aspergillosis is a complication in Covid patients and also a known complication with influenza patients. But, Lagrou added, 'The diagnosis with Covid patients is not easy and it's good to combine different tests. These patients might also have an invasive Candida infection, especially among those in the ICU. As yet, we are in the learning phase about the incidence, disease characteristics, and still evaluating these tests. It is too early to say what the exact value of the ß-glucan test is in this instance.' However, there are aspects of the Wako ß-glucan test that make it an appealing option for clinicians.



Toxinometer MT-6500 system by FUJIFILM Wako Chemicals Europe GmbH for the kinetic turbidimetric measurement of ß-D-glucan

The single sample test: a real advantage

'One of the things that appeal is the fact that you can run it as a single sample test,' Lagrou said. 'That's a real advantage because we are in a setting of several life-threatening infections where it is important to get the information as soon as possible and to be able to put together the results of different tests we are conducting. It's also a robust test and the reproducibility is very high.'

Other advantages, she pointed out, are that the test adds additional information, is not difficult to implement or execute, and staff can be trained to use it relatively easily, and it also delivers rapid results with clear benefits for prompt patient care. Lagrou believes there will be future areas where the Wako ß-glucan test can be of value and this will evolve as the sensitivity can be improved by lowering the cut-off value, with high sensitivity of particular importance when diagnosing invasive fungal infections.