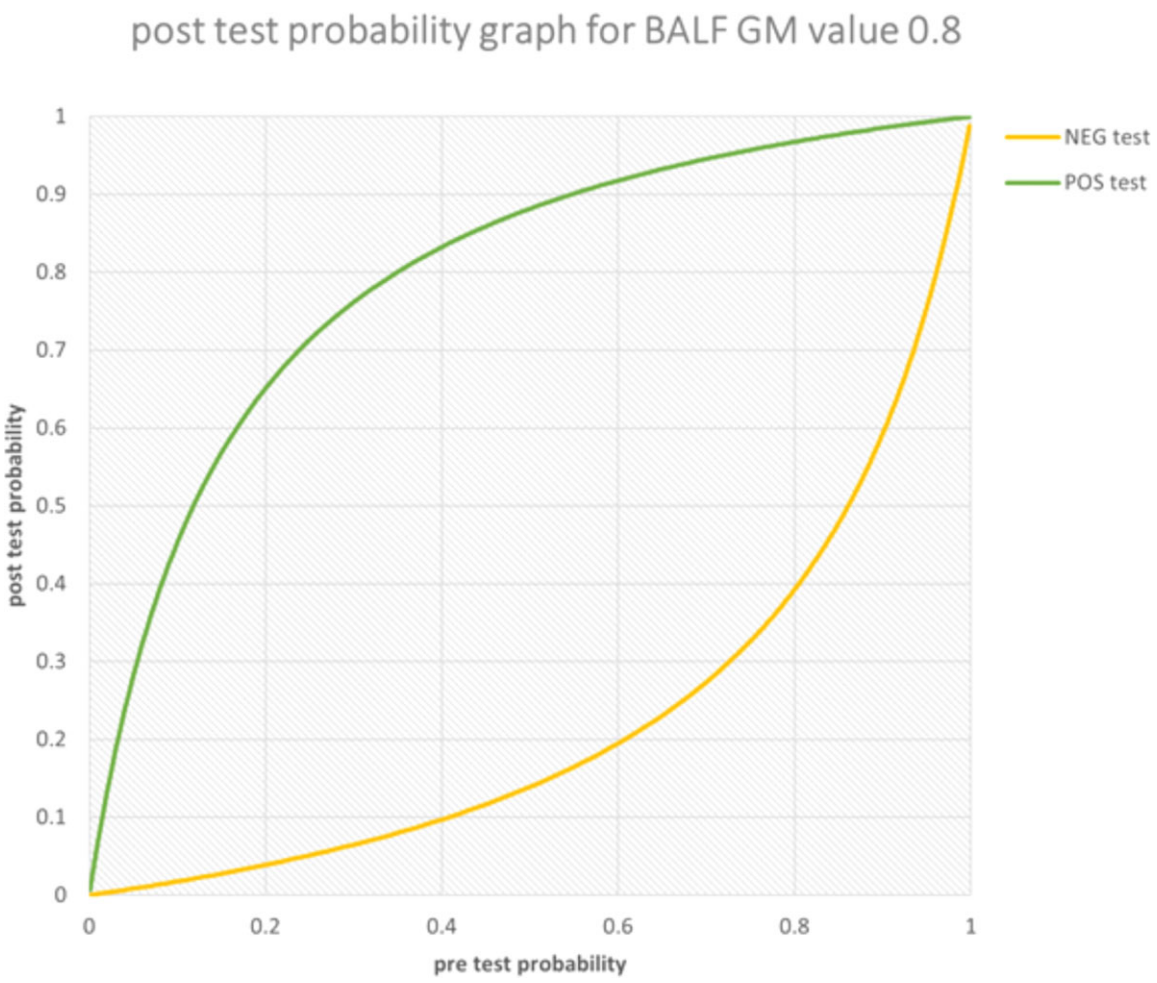

P500
Validation panel for MALDI-TOF identification of fungi

Dirk Stubbe, Pierre Becker, Elizabet D'hooge, Hanne Debergh, Ann Packeu
Service of Mycology and *Aerobiology, Sciensano, Brussels, Belgium*

Poster session 3, September 23, 2022, 12:30 PM - 1:30 PM

Sciensano, the Belgian federal scientific institute for public and animal health, houses the BCCM/IHEM Fungi Collection which contains more than 15 000 strains, belonging to over 1 500 different species. The collection is managed according to ISO 9001 standards.

Its purpose is to make fungal strains available for academics, clinicians, industry, and education.

Fungal pathogens are not as often encountered as bacteria in the clinical laboratory. Additionally, laboratories may not have the knowledge or logistics for the long-term preservation of axenic fungal isolates. Without an array of fungal strains with confirmed identity, it is complicated to implement new protocols and equipment when these need to be validated for the identification of fungi.

To short-cut this problem and support laboratories in identifying clinical fungi in routine activities, BCCM/IHEM has developed two validation panels for the identification of fungi via MALDI-TOF mass spectrometry: there is a validation panel with yeasts and a validation panel with filamentous fungi. The selection of strains is based on species that are routinely encountered in a clinical laboratory, and also contains some rarer, but emerging fungal pathogens, like *Trichophyton indotineae* and *Candida auris*. The identity and purity of the strains in these panels have been verified according to ISO 17025 accredited protocols. This allows the laboratory to evaluate in a short term the extraction protocol, the MALDI-TOF machine, and the database of reference mass spectra.

P501
***Aspergillus fumigatus* complicates one third of the patients with suspected bronchial asthma or pulmonary tuberculosis: Clinical validation of indigenously developed diagnostic kits**

Kavita Kale[1], Mohammed Husain Bharmal[1], Hansraj Choudhary[2], Anuradha Chowdhary[3], Anil Chaudhry[4], Ritesh Agarwal[2], M. Rudramurthy Shivaprakash[2], Arunaloke Chakrabarti[2], **Taruna Madan[1]**
[1]ICMR-NIRRCH, Mumbai, India
[2]Postgraduate Institute of Medical Education & Research, Chandigarh, India
[3]Vallabhbhai Patel Chest Institute, Delhi, India
[4]Rajan Babu Institute of Pulmonary Medicine and Tuberculosis, Delhi, India

Poster session 3, September 23, 2022, 12:30 PM - 1:30 PM

Objectives: *Aspergillus fumigatus*, an opportunistic fungus, causes complications in about 5%-20% of bronchial asthma and about 26% of pulmonary tuberculosis patients. Detection of *Aspergillus fumigatus* specific IgG and IgE antibodies in the patient serum is an excellent tool to screen for *Aspergillus* sensitization early on to employ anti-fungal drugs in the clinical management to stall the progression of lung fibrosis.

Methods: Novel indigenous AfuPEPLISA assays were developed for the detection of specific IgG and IgE, based on the 12 amino acid long synthetic peptide epitope of Asp f1, an 18 kDa major allergen/antigen. The novel diagnostic kits were manufactured at a licensed GMP facility under a test license. Independent validation of the kits was pursued at PGIMER and VPCI hospitals in suspected bronchial asthma patients ($n = 1307$), and the diagnostic efficiency was compared with currently used ImmunoCAP assay.

Results: The diagnostic specificity and sensitivity were found to be 95.7% and 89.8%, respectively, for IgG; and 94.2% and 70%, respectively for IgE AfuPEPLISA, and were not significantly different from ImmunoCAP assay. Screening of the suspected patients of pulmonary tuberculosis (PTB) at RBIPMT Hospital for the presence of *A. fumigatus* specific IgG and IgE antibodies was pursued using AfuPEPLISA kits. A total of 82 out of 254 suspected PTB patients (32.3%) were seropositive in agreement with the previous reports.

See Figures 1 and 2 below.

Conclusion: The study inferred that indigenously developed AfuPEPLISA kits are an economically viable option to integrate in the clinical management of patients with suspected bronchial asthma or PTB for efficient diagnosis of *Aspergillus* sensitization.

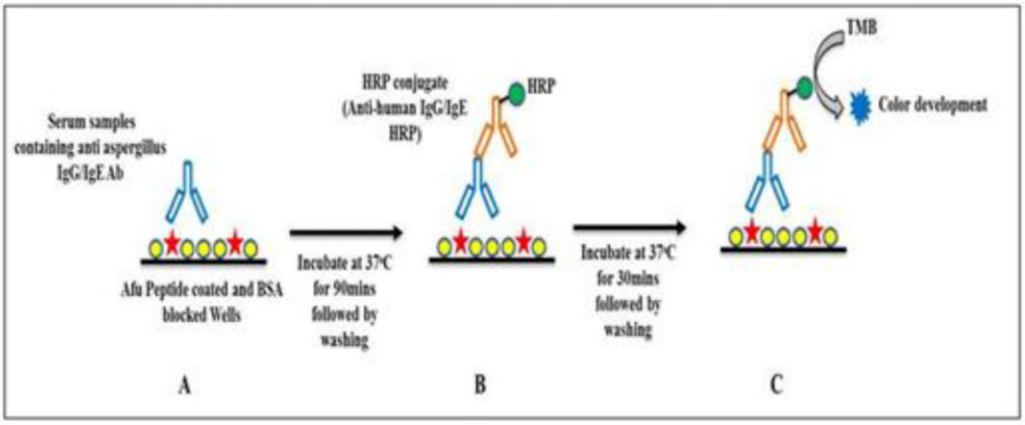

Figure 1. Schematic of AfuPEPLISA assay procedure. Serum samples pipetted to wells pre-coated with *A. fumigatus* epitopic peptide and blocked with BSA. During first incubation, anti-aspergillus IgG and IgE present in the serum binds to the coated peptide (A). After washing, anti-human IgG/IgE HRP conjugate is added to the wells during second incubation (B). In the third incubation, TMB substrate is added for detection (C).

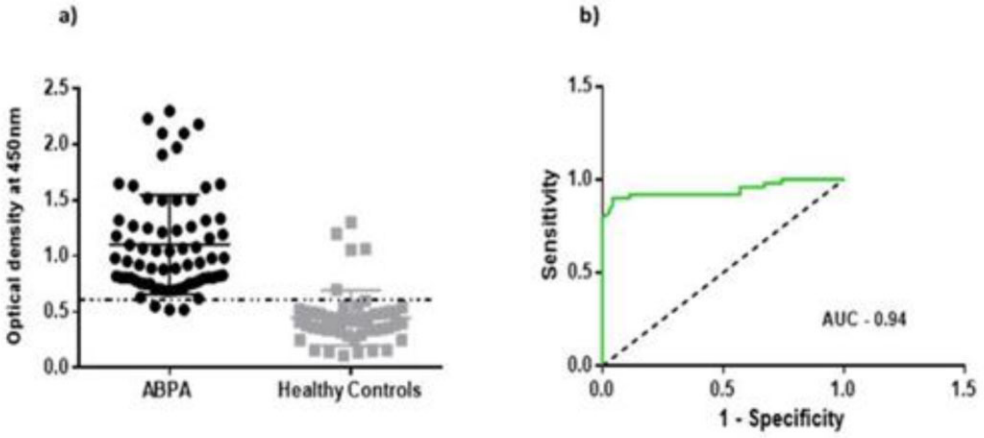

Figure 2. *Aspergillus fumigatus* specific IgG levels in subjects with allergic bronchopulmonary aspergillosis (ABPA) and heathy controls by AfuPEPLISA (a). ROC curve of IgG AfuPEPLISA in the differentiation of allergic bronchopulmonary aspergillosis patients from healthy controls (b). The curve presents the true positive rate (or sensitivity) in function of false positive rate for different cut-off points. Each point on the ROC curve represents a sensitivity/specificity pair corresponding to a particular decision threshold. The area under the curve (AUC) is 0.94. The best cut-off value of *A. fumigatus* specific IgG was found to be 0.6 (O.D value at 450 nm) with a sensitivity and specificity of 89.8% and 95.7%, respectively.

P502
Mycology lab of the future—slants to sequencing

Sheerin Shalam[1]

[1]All India Institute Of Medical Sciences Bibinagar Hyderabad India, Hyderabad, India

Poster session 3, September 23, 2022, 12:30 PM - 1:30 PM

As the world enters the third decade of the 21st century, infectious diseases continue to pose major challenges to the survival and well-being of human kind. The COVID-19 pandemic demonstrated how indispensable technological advances and innovations are in our fight against the vast legion of bugs; also, it a fascinating living proof of the adage 'Necessity is the mother of invention' to witness at what stupendous pace not only diagnostics but therapies and even vaccines were developed, approved, validated, distributed and utilized. All fueled by the overwhelming and unprecedented health emergency that was the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) pandemic. Many more infectious pathogens, presumably viral, are believed to be waiting in the wings; Monkeypox did not waste much time in proving us right!

In our country, India, the foresight of our best scientific brains and scientific policymakers led to the establishment of a network of Viral Research and Diagnostic Laboratories (VRDL) at the medical college, state, and regional levels with the premier institutes like National Institute of Virology (NIV), Pune, acting as an able mentor, under the aegis of the Indian Council of Medical Research (ICMR). The VRDL Network proved its worth and played an extremely important role in monitoring and