First case of *Aspergillus caelatus* colonization in a Chronic Obstructive Pulmonary Disease patient

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During a cross-sectional study on allergic aspergillosis in COPD patients conducted between 1 January 2015 to 30 March 2016 in Bogotá Colombia, we reported the case of a 65-year-female patient with chronic obstructive pulmonary disease (COPD) GOLD D, heart failure and chronic kidney disease. At the time of the visit she had dyspnea, no acute exacerbation (increased sputum production) was present, COPD assessment test was 27. She was receiving medical treatment with beclomethasone (1000 µg/day and oxygen) and she had not received antibiotic or antifungal treatment in the last three months. From sputum culture, *Aspergillus* was isolated repeatedly and identified as *Aspergillus* section *Flavi* on macroscopic characteristics on potato-dextrose agar. Wet mount preparation exhibited radiate biseriate and uniseriate heads supported by a roughened conidiophore classical for this specie (Fig 1). However, in contrast to *A. flavus* which possessed echinulate conidia (4-5 mM diam), the globose or subspherical conidia (7-8 mM diam) revealed prominent tubercles and a thick brown wall as described in the *Tamari* clade. Sequencing of β -tubulin assigned the isolate to *Aspergillus caelatus* (isolate NRRL 26104) with an identity of 100% whereas Calmodulin sequence exhibited 99 % identity with *Aspergillus caelatus* isolates (NRRL 26100, NRRL 25528, CBS 763.97). Comparison of our isolate with *A. flavus* as control for aflatoxin production through amplification of the aflR gene definitively distinct between *A. caelatus* and the aflatoxin producer *A. pseudocaelatus* (Fig 3).

However, pathogenicity of *A. caelatus* seem to be more elevated than *A. flavus* in the *G. mellonema* larvae model.

Antifungal drug susceptibility testing was performed by Sensititre YeastOne colorimetric assay using *C. parapsilosis* ATCC 22019 and *C. krusei* ATCC 6258 as quality control strains. Antifungal drug susceptibility testing revealed susceptibility to posaconazole (0.12 mg/L), voriconazole (0.5 mg/L), itraconazole (0,25 mg/L) but high MICs to fluconazole (256 mg/L), amphotericin B (4 mg/L) and 5-Flucytosine (8 mg/L).

Figure 1: Macroscopic colonies on Sabouraud agar at 37°C C after 4 days of incubation: *Aspergillus flavus* (A) and *A. caelatus* (D). Wet mount preparation with lactophenol cotton blue : *Aspergillus flavus* (B, C) and *A. caelatus* (E, F).

Figure 2: Neighbour-joining tree based on β tubulin sequences data

Figure 3: PCR results using aflR primers for *A. flavus* 32 (1), *A. flavus* 42 (2), *A. caelatus* CLI50 (3), *A. fumigatus* 11 (4), *A. fumigatus* 17 (5) and control (water) (6).

In region where *Aspergillus* section *Flavi* is frequently isolated, identification must be carefully done to identify the putative implication of the *Tamari* clade and *Aspergillus caelatus* in aspergillosis diseases, which only had been previously reported in agricultural soils and peanuts seeds.