



Use of The ATCC® *Aspergillus Fumigatus* Drug Testing Panel in Antifungal Drug Testing

Over the past 20 years, *Aspergillus fumigatus* has become one of the most frequent causes of invasive fungal infection in immunocompromised individuals, resulting in a range of diseases collectively termed aspergillosis^{1,2}. Current therapies for aspergillosis include treatment with antifungal drugs such as Amphotericin B or Triazole medications (Voriconazole, Posaconazole, Itraconazole)^{3,4}. Although the quality and efficacy of these antifungal therapies have significantly improved over the years, mortality due to invasive aspergillosis still remains high. This is further compounded by the growing number of antifungal drug-resistant strains, which has made the eradication of aspergillosis increasingly more difficult.

To aid in the analysis of novel antifungal medications, ATCC now offers a panel of *A. fumigatus* strains (ATCC® MP-12™) exhibiting various levels of sensitivity to common antifungal drugs. Each strain was examined for antifungal susceptibility using the Sensititre® YeastOne® YO9 colorimetric microdilution susceptibility test (TREK Diagnostic Systems, Cleveland, OH), according to the manufacturer's instructions. *A. fumigatus* strains were prepared in YeastOne® inoculum broth at an inoculum of 1.5-1.8 x 10³ CFU/mL and were incubated at 35°C for 24 to 48 hours in the presence of Amphotericin B (0.12-8 µg/mL), Posaconazole (0.008-8 µg/mL), Voriconazole (0.008-8 µg/mL), or Itraconazole (0.015-16 µg/mL). Fungal growth was evident as a change in the colorimetric growth indicator from blue (negative) to red (positive).

Each strain within the ATCC® *Aspergillus fumigatus* Drug Testing Panel (ATCC® MP-12™) was found to be sensitive to Amphotericin B and displayed varying levels of sensitivity to the Triazole antifungal drugs. In particular, resistance to Posaconazole, Voriconazole, and Itraconazole was evident with strain MYA-3627™, and increased sensitivity to these drugs was exhibited by 32820™. Overall, this panel of strains exhibits varying levels of sensitivity to different antifungal drugs, illustrating that this unique set of strains is well suited for drug discovery, testing, and development, among other applications.

TABLE 1. ATCC® *Aspergillus fumigatus* Drug Testing Panel (ATCC® MP-12™)


ATCC® No.	Strain	Comments*	MIC (µg/mL) to Drugs**			
			Amphotericin B	Posaconazole	Voriconazole	Itraconazole
1022™	QM 1981	Type strain	1	0.03	0.25	0.06
32820™	NCMH 77	Albino variant	2	<0.008	0.06	<0.015
90906™	151	T126C substitution	2	0.015	0.25	0.06
96918™	SRRC 2006	ICPA Reference	1	0.06	0.5	0.12
MYA-3626™	T33439	CLSI M38-A2	1	0.03	0.25	0.12
MYA-3627™	FG1432	CLSI M38-A2	1	0.12	0.25	0.5
MYA-4609™	Af293	Genome Sequenced	2	0.06	0.5	0.12


*T126C substitution refers to a base pair change in the ITS region of ATCC 90906 compared to the annotation of sequenced genome of MYA-4609; ICPA stands for International Committee on *Penicillium* and *Aspergillus*; and CLSI as Clinical Laboratory Science Institute.

**Minimal growth inhibitory concentration (µg/mL) is obtained by using TREK Diagnostic System's YeastOne product. Each value in the table is average of two independent testings, recorded at the 48 hour incubation. The data, different from those obtained by using traditional broth dilution methods, are provided for information purpose only to show their relative sensitivity to each drug.

References

1. Andriole V T. Infections with *Aspergillus* species. Clin Infect Dis. 1993;17:S481–S486.
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3. Herbrecht R, Denning DW, Patterson TF, Bennett JE, Greene RE, Oestmann JW, *et al.* Voriconazole versus amphotericin B for primary therapy of invasive aspergillosis. N Engl J Med. 347(6):408-415, 2002.
4. Centers for Disease Control and Prevention. Treatment & Outcomes of Aspergillosis. <http://www.cdc.gov/fungal/aspergillosis/treatment.html>, 2012.

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AP-012020-v02

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