

The antifungal agents Itraconazole and Isavuconazole exhibit antiviral activity during influenza A virus and *Aspergillus fumigatus* coinfection in vitro and ex vivo

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Influenza-associated pulmonary aspergillosis remains a life-threatening complication with high mortality. Although combined antiviral and antifungal therapy appears to be a rational approach, a better understanding of its effects on both pathogens is needed. The antifungal agent itraconazole (ITC) is already known for its antiviral properties against influenza A viruses (IAVs). However, its use in invasive pulmonary aspergillosis is limited for example by its high risk of drug-drug interactions. Instead, voriconazole (VRC) and isavuconazole (ISA) are recommended as first-line treatment options. Furthermore, the antiviral effect of ITC was yet not examined under coinfection conditions.

Thus, this project investigates the antiviral properties of ITC, VRC and ISA against IAVs during mono- and coinfection with *Aspergillus fumigatus* in presence and absence of the antiviral drug Oseltamivir (OSV). In *in vitro* assays, titres and viral protein expression of IAV was reduced in ITC and ISA-treated samples, but not in VCZ-treated ones. In combination with OSV the antiviral effects of ITC and ISA were enhanced. Subsequently, these findings were reproduced in *ex vivo* coinfection experiments using precision-cut mouse lung slices.

Our findings indicate that both ITC and ISA exhibit antiviral activity against IAV during mono- and coinfection, which is further enhanced in the presence of OSV. Further experiments are required to elucidate the underlying mechanisms of these observations.

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Junior scientist status

No, I am not a junior scientist.

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