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# Design and synthesis of novel antifungal peptides and their mode of action

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Antifungal peptides as novel therapeutics have raised considerable interest as pathogens frequently acquire resistant against conventional antifungal compounds1. In this regard, developments of antifungal peptides represent an attractive approach2. In the present study, we have investigated the antifungal activity of two classes of novel peptides. One class, de novo designed cationic, amphipathic antimicrobial peptides (AMPs) were inhibitory to the growth of various filamentous and non-filamentous fungi. The FITC tagged AMPs confirmed their rapid entry into the cell that corroborated with the killing time kinetics. Notably, these peptides displayed strong synergism with fluconazole (FLC) which correlated well with the cell death3. The main focus of other class of peptides is based on the structure and function of ABC protein which are overproduced in the resistant cells of Candida albicans4. These overproduced transporter proteins rapidly extrude incoming drugs in resistant strains. We rationally designed and synthesize peptides mimic against 12 transmembrane segments of one of the major drug transporter Cdr1 protein. Our data confirmed that TMS mimics interacted with the Cdr1 protein and blocked the efflux of entrapped fluorescent dyes. These TMS peptides also increased the efficacy of antifungals by blocking of efflux pump. Together, these peptides represent potent novel therapeutics which can be further optimize to become potent antifungals.

## Biography

Rajendra Prasad earned his Ph.D. in the field of biochemistry at the Agra University in the Central Drug Research Institute. Apart from intermittent research stays abroad he worked at the Jawaharlal Nehru University in New Delhi where he is a full professor at the School of Life Sciences since 1985. His international research experience led him as a research associate to the University of Southern California, School of Medicine, Los Angeles, and to the New York Medical College. He stayed as a Humboldt Fellow and Mercator Professor at the Universities of Bonn, and as a visiting professor in several other countries, e.g. in Spain, Belgium, France and the United States. He has published more than 200 papers in peer reviewed journals and supervised more than 50 PhD theses.

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