

# Pleiotropic effects of the vacuolar ABC transporter Mlt1 of *Candida albicans* on cell function and virulence.

Khandelwal NK, Kämmer P, Förster TM, Singh A, Coste AT, Andes DR, Hube B, Sanglard D, Chauhan N, Kaur R, d'Enfert C, Mondal AK, Prasad R (2016) Pleiotropic effects of the vacuolar ABC transporter Mlt1 of *Candida albicans* on cell function and virulence. *Biochem J* 473(11), 1537-1552.

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## Abstract

Among the several mechanisms that contribute to MDR (multidrug resistance), the overexpression of drug-efflux pumps belonging to the ABC (ATP-binding cassette) superfamily is the most frequent cause of resistance to antifungal agents. The multidrug transporter proteins Cdr1p and Cdr2p of the ABCG subfamily are major players in the development of MDR in *Candida albicans*. Because several genes coding for ABC proteins exist in the genome of *C. albicans*, but only Cdr1p and Cdr2p have established roles in MDR, it is implicit that the other members of the ABC family also have alternative physiological roles. The present study focuses on an ABC transporter of *C. albicans*, Mlt1p, which is localized in the vacuolar membrane and specifically transports PC (phosphatidylcholine) into the vacuolar lumen. Transcriptional profiling of the *mlt1* $\Delta/\Delta$  mutant revealed a down-regulation of the genes involved in endocytosis, oxidoreductase activity, virulence and hyphal development. High-throughput MS-based lipidome analysis revealed that the Mlt1p

levels affect lipid homoeostasis and thus lead to a plethora of physiological perturbations. These include a delay in endocytosis, inefficient sequestering of reactive oxygen species (ROS), defects in hyphal development and attenuated virulence. The present study is an emerging example where new and unconventional roles of an ABC transporter are being identified.

## Involved units

[Microbial Pathogenicity Mechanisms Bernhard Hube](#) [Read more](#)

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## **Awards**

Selected cover picture for Biochemical Journal

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