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CAGE AMIDES AND IMIDES AND THEIR ANTIMICROBIAL PROPERTIES

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Infectious diseases have become a major challenge to the global health system as killing millions of people worldwide. Compounds with unusual three-dimensional structures have frequently attracted the attention of chemists as possible synthetic targets, because the shape of chemical structures in drug discovery is a crucial component for modulation of biological activity. VP-4606 bearing 3-azabicyclo[3.2.1]oct-6-ene cage fragment, has strong antimicrobial effect on methicillin-resistant *Staphylococcus aureus* (ATCC 43300). VP-4539 with bicyclo[2.2.2]octene motif demonstrated high activity towards *Cryptococcus neoformans* (ATCC208821). Both compounds were detected by screening which was performed by the Community for Open Antimicrobial Drug Discovery (CO-ADD). Further, we have monitored their biological activity using MTT and CFU assays.

VP-4539 shows antifungal activity towards *Candida albicans* laboratory (ATCC 885-655) and drug resistant (N12) strains. Moreover, the differences in the antifungal activity of VP-4539 compound towards *Candida albicans* laboratory (ATCC 885-655) and resistant (N12) strains indicates the potential of this substance as perspective chemical constructs to overcome fungal multidrug-resistant infections. Both compounds demonstrated low cytotoxicity towards pseudo-normal mammalian cells, namely human keratinocytes of HaCaT line and murine fibroblasts of Balb/c 3T3 line, as well as mitogen-activated lymphocytes from peripheral blood of healthy donor.

Cage amides and imides are perspective synthetic compounds to be used like antimicrobial agents and capable to overcome drug resistance in microorganisms. They possess low toxicity towards pseudo-normal and normal mammalian cells. Motif changing in cage amides and imides provide different biological activity without increasing general toxicity. Their main disadvantage is poor water solubility which could be solved via their immobilization on the amphiphilic polymers