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(54) **BORON-CONTAINING SMALL MOLECULES**

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(58) **Field of Classification Search** 558/288; 514/64

See application file for complete search history.

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(57) **ABSTRACT**

This invention relates to compounds useful for treating fungal infections, more specifically topical treatment of onychomycosis and/or cutaneous fungal infections. This invention is directed to compounds that are active against fungi and have properties that allow the compound, when placed in contact with a patient, to reach the particular part of the skin, nail, hair, claw or hoof infected by the fungus. In particular the present compounds have physiochemical properties that facilitate penetration of the nail plate.

24 Claims, 63 Drawing Sheets

FIGURE 1A

	MIC (ug/mL)							
	C. albicans ATCC 90028	C. albicans F56	C. neoformans F285	A. fumigatus ATCC 13073	T. mentagrophytes F311	S. cerevisiae ANA309	T. rubrum F296	T. rubrum F296 w/ 5% keratin
C1	1	2	2	1	2	0.5	1	1
C2	2	0.5	1	2	4		8	8
C3	16	32	32	16	16	4	32	
C4	64	64	> 64	32	32	8	32	
C5	4	8	2	2	4	0.25	4	
C6	8	16	8	16	16	64	16	
C7	> 64	> 64	> 64	> 64	32	4	64	
C8	2	2	8	2	4	2	8	
C9	> 64	> 64	> 64	> 64	64	>64	64	

FIGURE 1B

C10	0.5	0.5	0.25	0.25	≤0.5	<0.06	1	2
C11	32	32	32	32	2	2	4	
C12	256					>64		
C13	16					2	16	
C16	32					8	16	
C17	64	64	64	16	4	16	8	
C18						2		
C19						0.5	8	
C20						8		
C21						4		
C22						>64		
C23						>64		

FIGURE 1C

C24						16		
C25						>64		
C26						>64		
C27						>64		
C28						<0.06	4	
C31						8		

FIGURE 2A

EXAMPLE 2A

Fungus	Broth used	MIC (μg/mL) (C10)	Ciclopirox	Terbinafine	Fluconazole	Itraconazole
A. fumigatus ATCC 13073	RPMI	0.25	nt	nt	>64	0.25
C. albicans ATCC 90028	RPMI	1	0.5	nt	0.25	≤0.12
C. albicans F56	RPMI	0.5	nt	nt	>64	0.25
C. glabrata ATCC 90030	RPMI + MOPs	≤0.5	≤0.5	64	nt	≤0.5
C. krusei ATCC 44507	RPMI + MOPs	1	≤0.5	64	nt	≤0.5
C. neoformans F285	RPMI	0.25	nt	nt	2	≤0.12
C. parapsilosis ATCC 22019	RPMI + MOPs	≤0.5	≤0.5	≤0.5	nt	≤0.5
C. tropicalis ATCC 13803	RPMI + MOPs	≤0.5	≤0.5	256	nt	1
E. floccosum ATCC 52066	RPMI + MOPs	≤0.5	≤0.5	≤0.5	nt	≤0.5
F. solani ATCC 36031	RPMI + MOPs	≤0.5	4	64	nt	>256
M. furfur ATCC 44344	Urea	1	≤0.5	2	nt	≤0.5
M. pachydermatis ATCC 96746	Urea	1	≤0.5	≤0.5	nt	≤0.5
M. sympodialis ATCC 44031	Urea	1	≤0.5	≤0.5	nt	≤0.5
M. audouinii ATCC 42558	RPMI + MOPs	2	1	≤0.5	nt	≤0.5
M. canis ATCC 10214	RPMI + MOPs	2	≤0.5	≤0.5	nt	≤0.5
M. gypseum ATCC 24103	RPMI + MOPs	2	≤0.5	≤0.5	nt	≤0.5
T. mentagrophytes F311	RPMI + MOPs	1	0.5	≤0.5	32	≤0.12
T. rubrum F296	RPMI + MOPs	1	1	≤0.5	1	≤0.12
T. rubrum F296	RPMI + MOPS + 5% keratin powder	2	1	nt	1	nt
T. tonsurans ATCC 28942	RPMI + MOPs	2	≤0.5	≤0.5	nt	≤0.5

nt = not tested

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