Mold/Candida/Fungus Studies

Fungus Type	Thieves ingredient	Abstract Summary
Rhizopus stolonifer	cinnamon	A wax paper infused with cinnamon essential oil completely inhibits the growth of Rhizopus stolonifer.
Aspergillus flavus Aspergillus fumigatus Aspergillus nidulans Aspergillus niger Candida albicans Candida tropicalis Candida kefyr Histoplasma capsulatum	cinnamon	Vapors of cinnamon bark oil prove to be a potent fungitoxicant against fungi which cause respiratory tract mycoses: Aspergillus niger, Aspergillus fumigatus, Aspergillus nidulans, Aspergillus flavus, Candida albicans, Candida tropicalis, Candida pseudotropicalis (Candida kefyr), and Histoplasma capsulatum.
Aspergillus parasiticus	cinnamon	Cinnamon oil caused inhibition of growth and aflatoxin production in Aspergillus parasiticus.
Aspergillus flavus Aspergillus niger Fusarium spp. Penicillium spp. Rhizopus spp.	cinnamon clove lemon	Citrus limon (lemon) essential oil and the phytochemical eugenol (found in cinnamon and clove) were among compounds used to test the sensitivity of mold strains Fusarium spp., Rhizopus spp., Aspergillus flavus, Aspergillus niger and Penicillium spp. Eugenol showed prominent anti-mold activity.
Aspergillus flavus Candida albicans Penicillium islandicum	cinnamon clove rosemary	Essential oils of cinnamon and clove showed strong inhibition of mold when tested for the possibility of creating a protective atmosphere by using natural compounds that could extend the shelf life of packaged foodstuffs. The oils were tested against Candida albicans, Penicillium islandicum and Aspergillus flavus. Rosemary was included in the test but results weren't as strong.
Aspergillus spp. Eurotium spp. Penicillium spp.	cinnamon clove rosemary	Cinnamon, rosemary, clove essential oils exhibited antifungal activity against Eurotium spp., Aspergillus spp. and Penicillium spp., the most important molds in terms of spoilage of bakery products. These findings strengthen the possibility of using plant essential oils as an alternative to chemicals to preserve bakery products.
Botrytis cinerea	cinnamon clove eucalyptus lemon rosemary	Among 20 oils tested, cinnamon and clove essential oil demonstrated the antifungal activity against Botrytis cinerea. Essential oils D-limonene, cineole, Beta-myrcene; Alpha-pinene, Beta-pinene, and camphor showed high antifungal activity. Lemon and rosemary and eucalyptus contain these compounds.
Coriolus versicolor Laetiporus sulphureus	cinnamon	Cinnamaldehyde, the major compound in cinnamon essential oil, showed strong antifungal indices against both Coriolus versicolor and Laetiporus sulphureus.