

Biblio\_mechanisms of resistance to fungicides\_01\_09\_2010

1. Leroux P, Fritz R, Debieu D, Albertini C, Lanen C, Bach J, Gredt M, Chapeland F. Mechanisms of resistance to fungicides in field strains of *Botrytis cinerea*. *Pest Manag Sci* 2002; 58: 876-88.
2. Canton J. The toxicity of benomyl, thiophanate-methyl, and BCM to four freshwater organisms. *Bull Environ Contam Toxicol* 1976; 16: 214-24.
3. Ficsor G, Bordas S, Stewart S. Mutagenicity testing of benomyl, methyl-2-benzimidazole carbamate, streptozotocin and N-methyl-N'-nitro-N-nitrosoguanidine in *Salmonella typhimurium* in vitro and in rodent host-mediated assays. *Mutat Res* 1978; 51: 151-65.
4. Marshall R, Murphy M, Kirkland D, Bentley K. Fluorescence in situ hybridization with chromosome-specific centromeric probes: a sensitive method to detect aneuploidy. *Mutat Res* 1996; 372: 233-45.
5. Zijno A, Marcon F, Leopardi P, Crebelli R. Analysis of chromosome segregation in cytokinesis-blocked human lymphocytes: non-disjunction is the prevalent damage resulting from low dose exposure to spindle poisons. *Mutagenesis* 1996; 11: 335-40.
6. Elhajouji A, Tibaldi F, Kirsch-Volders M. Indication from thresholds of chromosome non-disjunction versus chromosome lagging induced by spindle inhibitors in vitro in human lymphocytes. *Mutagenesis* 1997; 12: 133-40.
7. Bentley K, Kirkland D, Murphy M, Marshall R. Evaluation of thresholds for benomyl- and carbendazim-induced aneuploidy in cultured human lymphocytes using fluorescence in situ hybridization. *Mutat Res* 2000; 464: 45-51.
8. McCarroll N, Protezel A, Ioannou Y, Frank Stack H, Jackson M, Waters M, Dearfield K. A survey of EPA/OPP and open literature on selected pesticide chemicals. III. Mutagenicity and carcinogenicity of benomyl and carbendazim. *Mutat Res* 2002; 512: 1-35.
9. San-Blas G, Nino-Vegas G. *Paracoccidioides brasiliensis*: chemical and molecular tools for research on cell walls, antifungals, diagnosis, taxonomy. *Mycopathologia* 2008; 165: 183-95.
10. Morschhauser J. The genetic basis of fluconazole resistance development in *Candida albicans*. *Biochim Biophys Acta* 2002; 1587: 240-8.
11. Akins R. An update on antifungal targets and mechanisms of resistance in *Candida albicans*. *Med Mycol* 2005; 43: 285-318.

12. Franz R, Kelly S, Lamb D, Kelly D, Ruhnke M, Morschhauser J. Multiple molecular mechanisms contribute to stepwise development of fluconazole resistance in clinical *Candida albicans* strains. *Antimicrob Agents Chemother* 1998; 42: 3065-72.
13. Vanden Bossche H, Dromer F, Improvisi I, Lozano-Chiu M, Rex J, Sanglard D. Antifungal drug resistance in pathogenic fungi. *Med Mycol* 1998; 36 Suppl 1: 119-28.
14. Sanguinetti M, Posteraro B, Fiori B, Ranno S, Torelli R, Fadda G. Mechanism of azole resistance in clinical isolates of *Candida glabrata* collected during a hospital survey of antifungal resistance. *Antimicrob Agents Chemother* 2005; 49: 668-79.
15. Gray C, Ines Borges-Walmsley M, Evans GJ, Walmsley A. The *pfr1* gene from the human pathogenic fungus *Paracoccidioides brasiliensis* encodes a half-ABC transporter that is transcribed in response to treatment with fluconazole. *Yeast* 2003; 20: 865-80.
16. Costa Cda S, Albuquerque F, Andrade R, Oliveira G, Almeida M, Brigido Mde M, Maranhao A. Transporters in the *Paracoccidioides brasiliensis* transcriptome: insights on drug resistance. *Genet Mol Res* 2005; 4: 390-408.
17. Del Sorbo G, Schoonbeek H, De Waard M. Fungal transporters involved in efflux of natural toxic compounds and fungicides. *Fungal Genet Biol* 2000; 30: 1-15.
18. De Waard M, Andrade A, Hayashi K, Schoonbeek H, Stergiopoulos I, Zwieters L. Impact of fungal drug transporters on fungicide sensitivity, multidrug resistance and virulence. *Pest Manag Sci* 2006; 62: 195-207.
19. Del Sorbo G, Andrade A, Van Nistelrooy J, Van Kan J, Balzi E, De Waard M. Multidrug resistance in *Aspergillus nidulans* involves novel ATI-binding cassette transporters. *Mol Gen Genet* 1997; 254: 417-26.
20. Wolfger H, Mamnun Y, Kuchler K. Fungal ABC proteins: pleiotropic drug resistance, stress response and cellular detoxification. *Res Microbiol* 2001; 152: 375-89.
21. Prasad R, Panwar S, Smriti. Drug resistance in yeasts—an emerging scenario. *Adv Microb Physiol* 2002; 46: 155-201.
22. De Waard MA, Andrade A, Hayashi K, Schoonbeek H, Stergiopoulos I, Zwieters L. Impact of fungal drug transporters on fungicide sensitivity, multidrug resistance and virulence. *Pest Manag Sci* 2006; 62: 195-207.
23. Bertetti D, Garibaldi A, Gullino M. Resistance of *Botrytis cinerea* to fungicides in Italian vineyards. *Commun Agric Appl Biol Sci* 2008; 73: 273-82.
24. Leroux P, Fritz R, Debieu D, Albertini C, Lanen C, Bach J, Gredt M, Chapeland F. Mechanisms of resistance to fungicides in field strains of *Botrytis cinerea*. *Pest Manag Sci* 2002; 58: 876-88.
25. Yan K, Dickman M. Isolation of a beta-tubulin gene from *Fusarium moniliforme* that confers cold-sensitive benomyl resistance. *Appl Environ Microbiol* 1996; 62: 3053-6.

26. Buhr T, Dickman M. Isolation, characterization, and expression of a second beta-tubulin-encoding gene from *Colletotrichum gloeosporioides* f. sp. *aeschynomene*. *Appl Environ Microbiol* 1994; 60: 4155-9.
27. Cooley R, Caten C. Molecular analysis of the *Septoria nodorum* beta-tubulin gene and characterization of a benomyl-resistance mutation. *Mol Gen Genet* 1993; 237: 58-64.
28. Orbach M, Porro E, Yanofsky C. Cloning and characterization of the gene for beta-tubulin from a benomyl-resistant mutant of *Neurospora crassa* and its use as a dominant selectable marker. *Mol Cell Biol* 1986; 6: 2452-61.
29. Park S, Jung O, Chung Y, Lee C. Isolation and characterization of a benomyl-resistant form of beta-tubulin-encoding gene from the phytopathogenic fungus *Botryotinia fuckeliana*. *Mol Cells* 1997; 7: 104-9.
30. Nowak C, Kuck U. Development of an homologous transformation system for *Acremonium chrysogenum* based on the beta-tubulin gene. *Curr Genet* 1994; 25: 34-40.
31. Seip E, Woloshuk C, Payne G, Curtis S. Isolation and sequence analysis of a beta-tubulin gene from *Aspergillus flavus* and its use as a selectable marker. *Appl Environ Microbiol* 1990; 56: 3686-92.
32. Wu T, Skory C, Horng J, Linz J. Cloning and functional analysis of a beta-tubulin gene from a benomyl resistant mutant of *Aspergillus parasiticus*. *Gene* 1996; 182: 7-12.
33. Nakaune R, Nakano M. Benomyl resistance of *Colletotrichum acutatum* is caused by enhanced expression of beta-tubulin 1 gene regulated by putative leucine zipper protein CaBEN1. *Fungal Genet Biol* 2007; 44: 1324-35.
34. Can A, Albertini D. M-phase specific centrosome-microtubule alterations induced by the fungicide MBC in human granulose cells. *Mutat Res* 1997; 373: 139-51.
35. Howard R, Aist J. Cytoplasmic microtubules and fungal morphogenesis: ultrastructural effects of methyl benzimidazole-2-ylcarbamate determined by freeze-substitution of hyphal tip cells. *J Cell Biol* 1980; 87: 55-64.