FENBENDAZOLE and MEBENDAZOLE in the treatment of Multiple Myeloma

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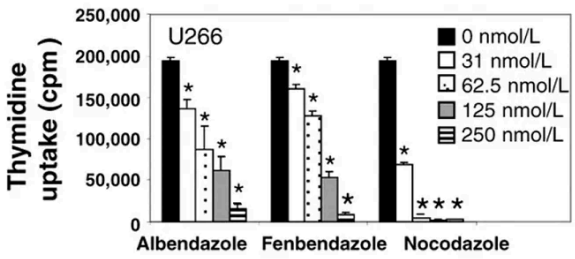
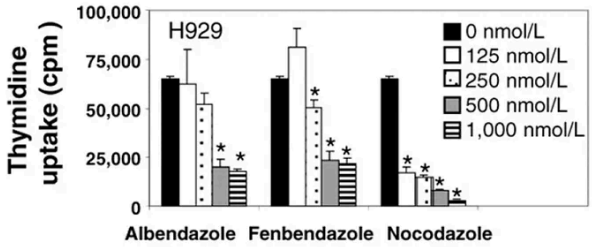
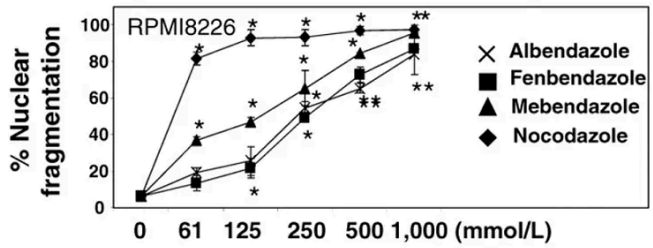






2011 Feng et al - Targeting the Microtubular Network as a New Antimyeloma Strategy

“Multiple myeloma is the second most prevalent hematologic malignancy and is uniformly fatal, very often as a result of development of drug resistance.

To overcome the chemoresistance to current therapies and improve patient outcome, novel treatment agents are needed to target mechanisms whereby multiple myeloma cells grow and survive"

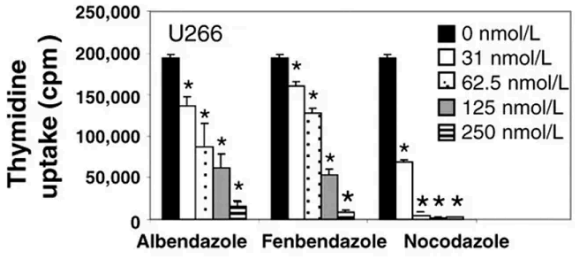
"By using multiplex cytokine array on a chemical library containing 1,000 compounds provided by the Multiple Myeloma Research Foundation, we showed that benzimidazoles (Fenbendazole and Mebendazole) significantly reduce the secretion of cytokines essential for multiple myeloma survival"

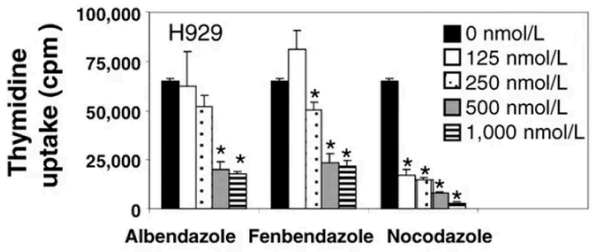
"**Benzimidazoles**, including albendazole, **fenbendazole, mebendazole,** and nocodazole, have been used as anthelmintics and fungicides on the basis of their antimicrotubule activity and have been reported to **elicit promising antitumor effect"**

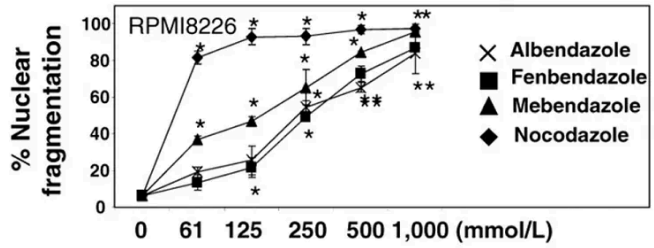
"In the present study, we show that benzimidazoles (Fenbendazole and Mebendazole) induce cell death in multiple myeloma cell lines and in primary CD138^{+} myeloma cells and overcome drug resistance."

"Albendazole, fenbendazole, and nocodazole significantly inhibited multiple myeloma cell proliferation"

"Furthermore, benzimidazoles (Fenbendazole and Mebendazole) induced nuclear fragmentation, a typical sign of cell apoptosis, in myeloma cells"







My Take...

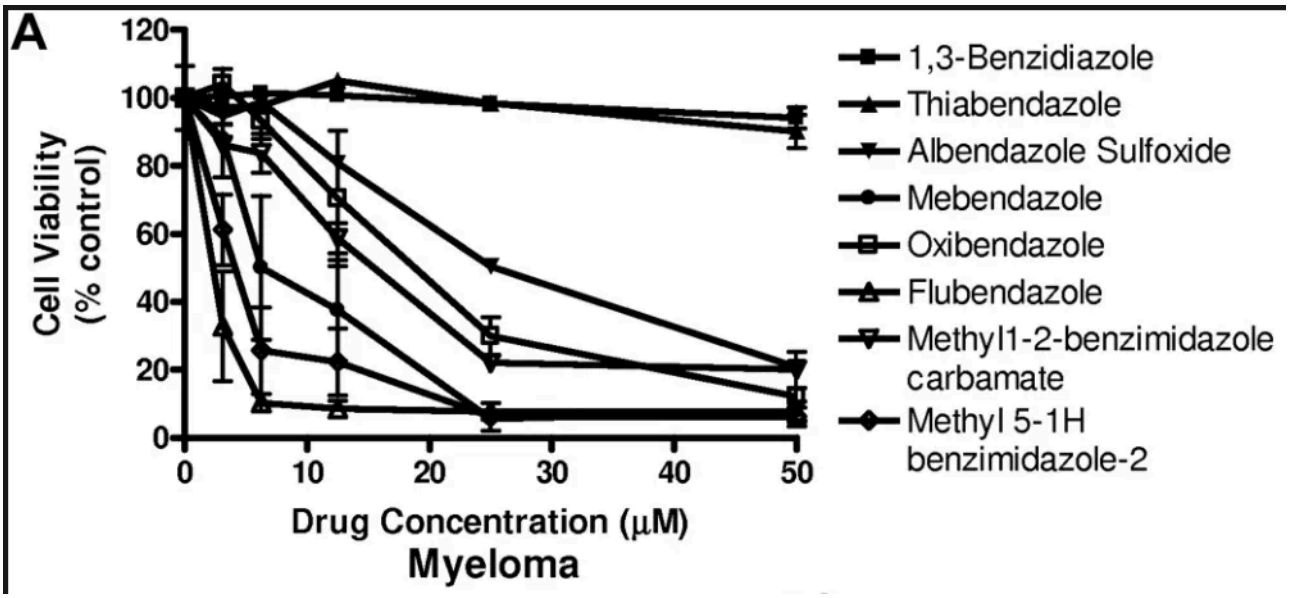
Anti-parasitic drugs Fenbendazole and Mebendazole are extremely popular right now, due to their ability to kill cancer cells & shrink tumors, by increasing p53 tumor suppressor levels (people who took COVID-19 Vaccines may have low p53 levels) and inhibiting glucose utilization by cancer cells.

For Multiple Myeloma, Mebendazole shows advantage over Fenbendazole at every dose.

The effect on cancer cells, however, is DOSE DEPENDENT.

At lower doses, Mebendazole is significantly superior to Fenbendazole, but as you go higher in dose, that advantage almost disappears. At the highest dose, the difference between the two is maybe 5% and Mebendazole is still the winner, but Fenbendazole is "almost as good".

2010 - Spagnuolo et al - The antihelmintic flubendazole inhibits microtubule function through a mechanism distinct from Vinca alkaloids and displays preclinical activity in leukemia and myeloma



"On-patent and off-patent drugs with previously unrecognized anticancer activity could be rapidly repurposed for this new indication given their prior toxicity testing"

“To identify drugs with unanticipated anticancer activity, we compiled a library of 110 on-patent and off-patent drugs focused on antimicrobials and metabolic regulators with a wide therapeutic index and well-characterized pharmacokinetics that were available from the Canadian and United States drug formularies.”

“We then screened this library at increasing concentrations, using the MTS assay, to **identify compounds that reduced the growth and viability of 3 leukemia cell lines after 72 hours of incubation**.”

“**From these screens, we identified several cytotoxic agents, including mebendazole.** Mebendazole is a member of the benzimidazole family of antihelmintics, so we investigated the cytotoxicity of this drug class. OCI-AML2 leukemia cells were treated with increasing concentrations of 8 benzimidazole family members. Seventy-two hours after incubation, cell growth and viability were measured by the MTS assay.

Mebendazole once again looks to be great at killing Multiple Myeloma cells.

Unfortunately, in the 2010 Spagnuolo study, we don’t have a comparison with Fenbendazole. Nevertheless, Mebendazole ends up on top.

Mebendazole’s ability to kill Multiple Myeloma cells, is very impressive.

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