

Editorial



Anthelmintics as Potential Anti-Cancer Drugs?

OPEN ACCESS

Received: Feb 8, 2020

Accepted: Feb 10, 2020

Address for Correspondence:

Dae Seog Heo, MD

Department of Internal Medicine, Seoul
National University Hospital, 101 Daehak-ro,
Jongno-gu, Seoul 03080, Korea.

E-mail: heo1013@snu.ac.kr

© 2020 The Korean Academy of Medical
Sciences.

This is an Open Access article distributed
under the terms of the Creative Commons
Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0/>)
which permits unrestricted non-commercial
use, distribution, and reproduction in any
medium, provided the original work is properly
cited.

ORCID iD

Dae Seog Heo

<https://orcid.org/0000-0001-5221-173X>

Disclosure

The author has no potential conflicts of
interest to disclose.

Dae Seog Heo

Department of Internal Medicine, Seoul National University College of Medicine, Seoul, Korea

The news that caught the attention of Korean cancer patients recent months was not about new anti-cancer drug development but about “animal anthelmintics.” A YouTube video of a US patient diagnosed with small cell lung cancer claimed he had been cured by fenbendazole (animal anthelmintic), while attending a clinical trial with other anti-cancer drug at the MD Anderson Cancer Center. When fenbendazole became difficult to obtain on the market, even the human anthelmintic (albendazole) was sold out.

ANTI-CANCER EFFECTS OF ANTHELMINTICS

Anti-cancer effects of fenbendazole, albendazole, and mebendazole have been known against cancer cell lines in vitro for a long time.¹ Microtubule destabilization is suggested as a mechanism of action.² Based on these findings, clinical trials have been done for cancer patients with albendazole or mebendazole.³ One Swedish clinical trial was initiated on August 11, 2018 and terminated on January 22, 2020 due to lack of effect after enrollment of 11 cancer patients.⁴ There is no definite evidence of anti-cancer effects in human patients so far. Clinical trial with fenbendazole is impossible, because it is not permitted for human use due to toxicities.

SAFETY ISSUES

Food and Drug Administration (FDA) and European Medicines Agency (EMA) prohibit fenbendazole for human use. Recommended dosage for animal is 5 mg/kg, which is more than 100 fold acceptable daily intake for human safety (40 micrograms per kilogram body weight). The decision was based on toxicity and teratogenicity studies conducted in Hoechst Research Laboratories (NADA 128-620).⁵ Actual toxicities, such as acute hepatitis, following self-administration of fenbendazole are reported.

SOCIAL REACTIONS

Even though the Korean Ministry of Food and Drug Safety warned that this claim was unfounded and that side effects of such drugs could damage patients, the outbreak of the anthelmintics is still ongoing. A conspiracy theory argues that pharmaceutical companies

are interfering with clinical trials of anthelmintics in cancer patients. However, it is not true because several clinical trials have been done with support from companies (clinicaltrials.com).

Claiming to cure terminal cancer patients with untested new drugs or food supplements have repeatedly appeared under media spotlight and disappeared. The desperation of terminal cancer patients and their families is fully understood emotionally, clinging to claims that there is even a slight possibility of catching straws.

As a Greek philosopher, Jamblichus, wrote 2000 years ago: “Medicine is the daughter of dreams.” This message remarkably still resonates today. When faced with a bleak or uncertain reality, we tend to pursue “dreams” or hope. However, rather than questioning whether our dreams are valid, we naively cling to the presence of dreams. Such dreams inevitably become stronger than rational thought.

In the internet environment where anyone can easily access various untested medical data, information is delivered without filtration and the propagation speed is surprisingly fast. Claims are not always facts. Unverified medical information is causing confusion or unnecessary pain rather than helping patients and their families.

In order to minimize such unnecessary confusion, objective verification through evidence-based medicine is required. Additional efforts of experts are needed to disseminate validated medical information to the public (especially patients).

REFERENCES

1. Duan Q, Liu Y, Rockwell S. Fenbendazole as a potential anticancer drug. *Anticancer Res* 2013;33(2):355-62. [PUBMED](#)
2. Dogra N, Kumar A, Mukhopadhyay T. Fenbendazole acts as a moderate microtubule destabilizing agent and causes cancer cell death by modulating multiple cellular pathways. *Sci Rep* 2018;8(1):11926. [PUBMED](#) | [CROSSREF](#)
3. Morris DL, Jourdan JL, Pourgholami MH. Pilot study of albendazole in patients with advanced malignancy. Effect on serum tumor markers/high incidence of neutropenia. *Oncology* 2001;61(1):42-6. [PUBMED](#) | [CROSSREF](#)
4. A clinical safety and efficacy study of mebendazole on GI cancer or cancer of unknown origin. <https://clinicaltrials.gov/ct2/show/NCT03628079?term=mebendazole&draw=2&rank=9>. Accessed Feb 6, 2020.
5. Freedom of information summary. <https://animaldrugsatfda.fda.gov/adafda/app/search/public/document/downloadFoi/389>. Accessed Feb 6, 2020.