ECRONICON OPEN ACCESS

EC PHARMACOLOGY AND TOXICOLOGY

Editorial

Magnetic Water and Field in Anti-Cancer Treatment

Da-Yong Lu* and Hong-Ying Wu

School of Life Sciences, Shanghai University, PR China

***Corresponding Author:** Da-Yong Lu, School of Life Sciences, Shanghai University, PR China.

Received: January 08, 2025; **Published:** January 28, 2025

Abstract

Cancer is a deadly disease with high rate of human mortality. Cancer treatment contains surgery, radiotherapy, immunotherapy, biotherapy, thermotherapies herbal medicine, chemotherapy and others. Chemotherapy is the most popular option yet has much to improve for its high toxicity, lack of specificity and drug resistance.

Magnetic water, field and nanoparticles have been found to improve dilemma of chemotherapy discussed above. In order to promote cancer treatment by chemotherapy, the mechanisms, pathways and targets of anticancer drugs associated with magnetic waters or others should be known and promoted.

Magnetic water or fields in cancer treatment is a long-lasting topic with modern twist and turn. New researches on mechanism discovery and therapeutic routine establishment may help fostering new knowledge and tradition in hospitals and medicine. Novel initial activities and investigations should be made for better cancer treatments via magnetic-related technology and biomedical knowledge.

Keywords: *Chemotherapy; Anticancer Drugs; Magnetic Water; Cancer Research; Oncology Biology*

Introduction

Epidemics of cancer

Cancer is a malignant and deadly disease with high human mortality (approximately 50% death for all cancer patients). Cancer treatment contains surgery, radiotherapy, immunotherapy, thermotherapy, herbal medicine, chemotherapy and others. Currently, anticancer drug treatments (chemotherapy) is the most popular selection and plays decisive roles for cancer treatment, especially for leukemia and neoplasm metastasis [1-6]. Nonetheless, chemotherapy has much to improve for its high toxicity, lack of specificity and multidrug resistance.

A long-lasting discovery

Magnetic water and field is a long-lasting discovery without serious attention worldwide [7-13]. The next-generation studies in this field should be noticed. To facilitate this evolution, this article introduces it in specific arena.

Clinical situations

Dilemma overcoming for chemotherapy

Since anticancer drugs do not show satisfactory outcomes in the clinic due to its high toxicity to normal cells and organs, new initiatives should be aimed to overcome this chemotherapy dilemma. Different types of medical efforts are provided to alleviate drug toxicity to normal tissue worldwide.

Modification of chemotherapies by magnetic water

Magnetic water or fields in cancer treatment is a long-lasting topic with modern renovation. New researches on mechanisms may help fostering new knowledge and routine in hospitals. Novel initial activities and investigations should be made for better cancer treatments via magnetic-related technology.

Magnetic water (MW) can support drug treatment in mice (increasing mice survivals and reducing toxicities) [9]. Though many such events were shown and reported in the animal studies, its biomedical potentiality and applications is repeated in wide-ranges. In addition, other work supported this biomedical and pharmaceutical pathway in the field of cancer researches [9-10].

Hypothesis of magnetic water and fields

Mechanisms and hypothesis for MW in cancer treatment

It was shown that magnetic water or fields possibly help patients to enduring drug toxicity and enhance therapeutic outcomes (drug responses) in mice and humans [7-10]. It provides a new vision for promoting cancer treatments and patient's survivals. Such work can be useful routes for therapeutic study and clinical application for easily handling and minimum costs. Until now, it shows no negative efficacy in the utility of MW for cancer treatment. To facilitate these studies and applications in clinical oncology, further work is necessary (Table).

Hypotheses	Pathways and mechanisms	References
Drug distributions	Retention ratio between normal and malignant cells	7
Kidney functions	Drug elimination	8
Body function	Increase of body health	9
Cancer malignancy	Mechanistic differences in various cells	10
Reactive-oxidative stress	Inorganic element complex in tumors	8, 12

Table: *Hypotheses for magnetic water in cancer treatment.*

Future trends

Mechanistic exploration and therapeutic widening

The mechanisms of tumor pathology by magnetic water and field is a mystery now. Exploring mechanisms is a future trend. It depends on the progress of oncological knowledge. Several pathways are most important to know. We exemplified them in the following.

Since cancer is a genetic disease [14], we should study the relationship between MW and cancer genomic instability. To facilitate these researches, the therapeutic outcomes can be achieved.

The current dilemma for metastatic treatment is the bi-directional progress of cancer pathology [15,16]. The efficacy for MW for bi-directional pathogenesis may be testified.

Herbal medicine has multiple chemical components and useful for cancer treatments [17]. Its combination with MW will be an interesting topic in future.

Applications in other fields

Apart from applications in medicine, other field of MW application, like agriculture also show prosperities [18,19]. In order to promote these technologies, we should try to understand their mechanisms. New researches may be helpful for fostering new knowledge and

technology in this respect worldwide, like magnetic treatment equipment, methods and instrument, different treatment schedule comparisons. This will be very important for their wide-utility and therapeutic achievements.

Conclusion

It is shown that magnetic water and field can be useful way for cancer treatments and life-savor. New initiatives and activities should be pursued from science and technology. Better cancer treatments will be aimed.

Bibliography

1. Lu DY and Lu TR. "Anticancer drug development, challenge and dilemma". *Nursing and Care Open Access* 7.3 (2020): 72-75.
2. Hay M., *et al*. "Clinical development success rates for investigational drugs". *Nature Biotechnology* 32 (2014): 40-51.
3. Lu DY., *et al*. "Cancer metastasis treatments". *Current Drug Therapy* 8.1 (2013): 24-29.
4. Lambert AW., *et al*. "Emerging biological principles of metastasis". *Cell* 168.4 (2017): 670-691.
5. Gerstberger S., *et al*. "Metastasis". *Cell* 186.8 (2023): 1564-1579.
6. Lu DY and Xu B. "Cancer bone metastasis, experimental study". *Acta Scientific Orthopeadics* 4.11 (2022): 46.
7. Tanaka T., *et al*. "Tumor targeting based on the effect of enhanced permeability and retentions (EPR) and the mechanism of receptor-mediated endocytosis (RME)". *International Journal of Pharmaceutics* 277.1-2 (2004): 39-61.
8. Rageh MM., *et al*. "Magnetic fields enhance the anti-tumor efficacy of low dose cisplatin and reduce the nephrotoxicity". *Naunyn-Schmiedeberg's Archives of Pharmacology* 393.8 (2020): 1475-1485.
9. Lu DY., *et al*. "Effect of magnetized water on the mice given high doses of antineoplastic drugs". *Journal of Shanghai University (England)* 3.1 (1999): 81-83.
10. Lu DY and Wu HY. "Chemotherapy and magnetic water in anticancer treatment". *EC Pharmacology and Toxicology* 12.11 (2024): 1-2.
11. Xiao P., *et al*. "Experimental observations of magnetic liquid impact on neoplasm cells". *Chin J Phys Med.* 7.3 (1985): 159-163.
12. Spoiala A., *et al*. "Smarter magnetic drug delivery systems for the treatment of cancer". *Nanomaterials* 13.5 (2023): 876.
13. Lu DY and Lu TR. "Antimetastatic drugs, pharmacologic challenge and opportunity". *Current Drug Therapy* 20.2 (2025): 169-179.
14. Wang DF., *et al*. "Accelerating the understanding of cancer biology through the lens of genomics". *Cell* 186.8 (2023): 1755-1771.
15. Van Denderen BJW and Thompson EW. "The to and fro of tumour spread". *Nature* 493.7433 (2013): 487-488.
16. Lu DY., *et al*. "Cancer metastasis, a clinical dilemma for therapeutics". *Current Drug Therapy* 11.2 (2016): 163-169.
17. Lu DY., *et al*. "Natural drug cancer treatment strategies from herbal medicine to chemical or biological drug". *Studies in Natural Products Chemistry* 66 (2020): 91-115.

18. Bouhlel M., *et al*. "Improvement of salt leaching efficacy and water content of soil through irrigation with electro-magnetized saline water". *Water* 16.20 (2024): 3010.

19. Putti FF., *et al*. "Effect of magnetic water treatment on the growth, nutritional status, and yield of Lettuce plants with irrigation rate". *Horticulturae* 9.4 (2023): 504.

Volume 13 Issue 2 February 2025