

Effect of *Morinda citrifolia* L. fruit extract on the breast cancer cells and preparation of microemulsions for the extract

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Abstract

This study were aimed to determine cytotoxic and anti-migration effects of *Morinda citrifolia* L. fruit extract on human breast cancer cells and to prepare microemulsions for the extract. The ethanolic *Morinda citrifolia* L. fruit extract showed cytotoxicity with IC_{50} values of $220.0 \pm 15.0 \mu\text{g/ml}$ and anti-migration effect on human MCF-7 cancer cells with significant effect at $100 \mu\text{g/ml}$. Microemulsion (ME) systems were developed by titration method and further selected to incorporate the extract based on the suitable physicochemical characteristics of the ME prepared. The ME systems consisted of olive oil or isopropyl myristate as an oil phase, PEG40 hydrogenated castor oil or Tween 80 as a surfactant and Span 80 as a co-surfactant. The developed ME containing the extract were evaluated regarding their physical appearance, viscosity and pH before and after stability test. The stability study was carried out at room temperature and $45 \text{ }^{\circ}\text{C}$ for 60 days. After stability test at different temperatures, the ME containing the extract consisting of 56% w/w olive oil, 20% w/w tween 80, 20% w/w span 80, 0.7% w/w the extract, and 4% w/w water phase was shown to be the most attractive ME for treatment breast cancer via topical route.

Key words: *Morinda citrifolia* L., breast cancer cells, microemulsion

Image

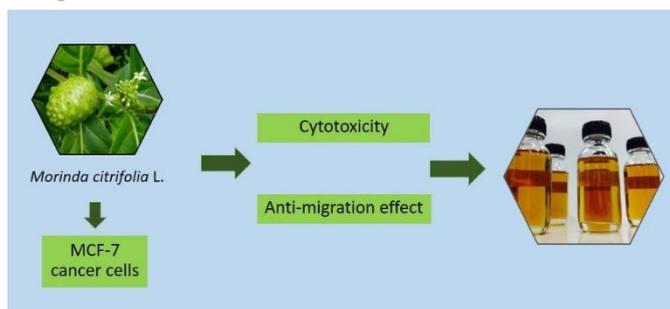


Figure 1. Diagram of the effects of *Morinda citrifolia* L. on human breast cancer cells and preparation of microemulsion.

Recent Publications (minimum 5)

1. Boontha S, Chumchuensanoi A, Charachit W, Deepaen C, Jareontanakul C, Wongmano S, Pitaksuteepong T. Comparative Evaluation on Rutin Content, Radical Scavenging Activity and Properties of Tablets Prepared from Noni Leaf and Fruit Extracts. NU. International Journal of Science 13(1): 17 – 25, 2016.
2. Buranrat B, Noiwetech S, Suksar T, Ta-ut A, Boontha S. Cytotoxic and antimigration effects of different parts of *Oroxylum indicum* extract on human breast cancer MCF-7 cells” Science & Technology Asia 23 (4): 42-52, 2018.
3. Buranrat B, Boontha S. Ethanolic extract of Piper Nigrum inhibits human breast cancer cell growth and cell migration by interfering with mevalonate pathway (Accepted, Journal of pharmaceutical analysis, In Press).
4. Buranrat B, Boontha S. Anti-proliferative and anti-migratory activities of bisphosphonates against the human breast cancer cell line MCF-7. (Accepted, Oncology letter, In Press).
5. Boontha B, Taowkaen J, Phakwan T, Worauaichai T, Kamonnate P, Buranrat B, Pitaksuteepong T. Determination of antioxidant activity and anticancer activity on MCF-7 cells of *Piper betle* leaf extract and formulation of transdermal patches. Submitted to Tropical Journal of Pharmaceutical Research (Under review).



Biography

Supavadee Boontha is a Lecturer at School of Pharmaceutical Sciences at University of Phayao. She studied B. Pharm at the Naresuan University, and also received her Ph.D. in Pharmaceutical technology from Faculty of Pharmaceutical Sciences at the Naresuan University, working on vaccine delivery and delivery system of herbal medicine for cancer treatment.

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Notes/Comments: