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Short Communication

EXAMINING THE MULTIPLE TARGET PHARMACOLOGICAL MECHANISMS OF FOLIUM ARTEMISIAE ARGYI'S BREAST CANCER-RELEASING EFFECTS

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DESCRIPTION

There are 1.38 million new cases of breast cancer each year, and there are around 0.46 million related deaths worldwide, making it the most common cancer that affects women. By 2050, there will be around 3.2 million new cases annually, according to current predictions. As is common knowledge, there are variations in the occurrence, progression, prognosis, and therapy of breast cancer. Currently, five key molecular subtypes are used to determine the most appropriate comprehensive adjuvant therapies, which may include chemotherapy, radiation, endocrine therapy, and HER2 targeted therapy. The patient's quality of life is greatly reduced by these expensive medicines' numerous short- and long-term adverse effects, which can include febrile neutropenia, alopecia, peripheral neuropathy, and cardiotoxicity. Not to mention how much more intolerant these adverse reactions are in older individuals who are nearing the end of their lives [1].

The Chinese herbal remedy Folium Artemisiae Argyi (FAA), sometimes known as wormwood, has antipyretic, analgesic, and hemostatic properties. Since ancient times, it has been applied externally to remove dampness and ease itching and used internally to warm channels, stop bleeding, disperse cold, and relieve pain. Due to several shortcomings of Western medicine, such as its toxicity and unfavourable side effects, more and more focus has recently been placed on the role of Traditional Chinese medicine in the prevention and treatment of cancer. Chinese herbs can simultaneously target a number of different areas to provide synergistic effects [2]. Pharmacology studies have shown that FAA has a number of chemically active components, including volatile oils, phenolic acids, flavonoids, and terpenoids, and that it has a variety of actions, including anticancer, anti-inflammatory, and anti-oxidative, revealed FAA acted on Bcl-2 family proteins and the MEK/ERK pathway to suppress growth and increase apoptosis in breast cancer cells. Additionally, it was noted that FAA inhibited hepatoma cells in a dose-dependent manner. Although numerous investigations confirmed that FAA has remarkable anticancer properties, the underlying processes are still not well understood [3].

Herbal medications are well recognised to have multiple components, multiple targets, and multiple pathways. Network pharmacology in traditional Chinese medicine is a methodical study approach based on the network of interactions between herbs, chemicals, targets, diseases, and genes. This method places a focus on the integration of bio-informatics, systems biology, and pharmacology, which not only corresponds to the systematic and holistic perspective of Traditional Chinese medicine theory but also systematically explains the intricate connections between herbs and diseases. In order to investigate the pharmacological processes of FAA as a treatment for breast cancer, we used a network pharmacology approach in this study. In the beginning, we evaluated the Oral Bioavailability (OB) and Drug-Likeness (DL) of FAA's active components. Subsequently, using Genecards and the Online Mendelian Inheritance in Man database (OMIM), we identified the common targets shared by the FAA compound targets and the breast cancer-related targets. We then built the network by analysing the probable interconnections between the different target nodes [4]. In order to further investigate the potential mechanisms of action of FAA against breast cancer, Protein-Protein Interaction (PPI) data were obtained from the Search Tool for the Retrieval of Interacting Genes (STRING) database and enrichment analyses (Gene Ontology [GO] and Kyoto Encyclopedia of Genes and Genomes [KEGG]) were carried out. In conclusion, our study sought to systematically clarify the mechanisms of FAA and identify the prospective targets and pathways of FAA as a therapeutic against breast cancer utilising the network pharmacology approach [5].

CONCLUSION

This study, which was a supplement to earlier studies on breast cancer treatments, used a network method to show how FAA

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chemicals influence various breast cancer prevention pathways. Furthermore, we found that FAA had a significant impact on a number of breast cancer-related targets. This finding was consistent with recent developments in cancer research, which demonstrate that the gradual accumulation of various genome modifications in cancer cells is what causes breast cancer to occur and progress.

In order to effectively manage an illness and deliver treatments, patient compliance with a specified treatment plan is essential. Therefore, it is crucial that the patient accepts and is happy with the recommended treatment plan. Recent research has shown that patients' attitudes toward a therapy regimen are influenced by the agent's sensory triggering properties as well as by how simple and comfortable it is to administer. Variations in delivery methods, operational techniques, and usability are key elements influencing patient adherence. Given the positive correlation between patient preference and compliance, it is crucial to take patient acceptability into account when prescribing drugs, especially those that must be given intranasally. The ambiguity and variation in the instructions show a lack of understanding of the proper ways to use a nasal spray device. Observed that as viscosity increased, the area of deposition shrank, but this was mitigated by a rise in droplet size and a fall in the width of the spray plume. A better patient experience and increased patient compliance are highly possible if all the aforementioned criteria are carefully considered when creating an intranasal drug delivery device.

The nose is an appropriate site for administering a variety of medications and vaccines, but its full potential has not yet been fully explored due to structural restrictions relating to nasal anatomy, physiology, and aerodynamics. Significant advancements in the technical device sector have demonstrated observable trustworthy *in vitro* outcomes, improving clinical performance. Testing *in vitro* performance is without a doubt crucial for determining the quality of a product, but its ability to predict clinical performance *in vivo* is still debatable. The early stages of device design may be critical for CFD models of nasal aerodynamics; followed by upcoming developments that boost predictive value. Important data must be obtained through human *in vivo* deposition and clearance studies, especially if the latest developments call for extensive quantification and tissue attenuation correction. Controlled clinical studies are required to assess changes in symptoms and the functional architecture, as well as to demonstrate the effectiveness of innovative medications and devices.

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