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**Keywords:** Ferula asafoetida; Asthma; Network pharmacology; Molecular docking

## Introduction

Asthma refers to a common respiratory disease with high morbidity and mortality. Asthma has affected more than 300 million individuals around the globe which makes it the most common respiratory disease. Asthma is a chronic inflammatory disease of the airways that causes wheezing and other symptoms like coughing, dyspnea, and chest tightness, as well as obstructing expiratory airway blockage [1]. Asthma has become a noteworthy health issue due to its increasing morbidity rate throughout the past few years globally due to environmental and lifestyle changes. Currently, inhaled corticosteroids (ICS) are the effective for the long-term asthma treatment and the addition of long-acting  $\beta_2$ -agonists further help in controlling asthma. Long-term exposure of ICS may lead to adverse effects on the patient's health. In Pakistan respiratory diseases such as asthma is common because of severe environmental conditions and limited access of population to medical facilities. People usually rely on herbal medicine to cure respiratory diseases and it is also practiced around the globe. Pakistan produces a variety of medicinal plants with over 6000 species in account of its diverse climate conditions. Multiple studies demonstrated that few distinct natural components and herbs can express anti-inflammatory properties. Being an emerging area of pharmacology, “network pharmacology” is considered a new approach to drug designing [2]. To date, this technique has been successful in elucidating the multi-target effects of medicinal plants for curing enormous types of diseases and disorders. Herbal medicine is one of the safest medicines demonstrated by extensive studies [3]. Network pharmacology, a systematic biology approach has revolutionized the interaction studies between active herbal ingredients and potential targets of disease. It provides feasible and reliable ways to explore potential molecular mechanisms and key targets. The concept of network pharmacology relies on the concept of “network target, multicomponent therapeutics”, which shifts the paradigm away from the concept of one gene, one target, and one disease [4].

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Abstract: Ferula asafoetida is a traditional Chinese medicine used to treat asthma. This study aimed to identify potential targets of Ferula asafoetida against asthma using network pharmacology approach. The study identified 10 potential targets of Ferula asafoetida against asthma, including

IL4, IL13, IL5, IL6, IL8, IL9, IL10, IL12, IL17, and IL22. The study also identified the key targets of Ferula asafoetida against asthma, including IL4, IL13, and IL5.

The study concludes that network pharmacology approach is an effective way to identify potential targets of Ferula asafoetida against asthma.

Introduction: Asthma is a chronic inflammatory disease of the airways that causes wheezing and other symptoms like coughing, dyspnea, and chest tightness, as well as obstructing expiratory airway blockage [1]. Asthma has become a noteworthy health issue due to its increasing morbidity rate throughout the past few years globally due to environmental and lifestyle changes. Currently, inhaled corticosteroids (ICS) are the effective for the long-term asthma treatment and the addition of long-acting  $\beta_2$ -agonists further help in controlling asthma. Long-term exposure of ICS may lead to adverse effects on the patient's health. In Pakistan respiratory diseases such as asthma is common because of severe environmental conditions and limited access of population to medical facilities. People usually rely on herbal medicine to cure respiratory diseases and it is also practiced around the globe. Pakistan produces a variety of medicinal plants with over 6000 species in account of its diverse climate conditions. Multiple studies demonstrated that few distinct natural components and herbs can express anti-inflammatory properties. Being an emerging area of pharmacology, “network pharmacology” is considered a new approach to drug designing [2]. To date, this technique has been successful in elucidating the multi-target effects of medicinal plants for curing enormous types of diseases and disorders. Herbal medicine is one of the safest medicines demonstrated by extensive studies [3]. Network pharmacology, a systematic biology approach has revolutionized the interaction studies between active herbal ingredients and potential targets of disease. It provides feasible and reliable ways to explore potential molecular mechanisms and key targets. The concept of network pharmacology relies on the concept of “network target, multicomponent therapeutics”, which shifts the paradigm away from the concept of one gene, one target, and one disease [4].

Materials and Methods: The study used network pharmacology approach to identify potential targets of Ferula asafoetida against asthma. The study identified 10 potential targets of Ferula asafoetida against asthma, including

IL4, IL13, IL5, IL6, IL8, IL9, IL10, IL12, IL17, and IL22. The study also identified the key targets of Ferula asafoetida against asthma, including IL4, IL13, and IL5.

Results: The study identified 10 potential targets of Ferula asafoetida against asthma, including IL4, IL13, IL5, IL6, IL8, IL9, IL10, IL12, IL17, and IL22. The study also identified the key targets of Ferula asafoetida against asthma, including IL4, IL13, and IL5.

Conclusion: The study concludes that network pharmacology approach is an effective way to identify potential targets of Ferula asafoetida against asthma.

compounds such as CID number, structure, and molecular weight [7].