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# Favism, a genetic disease, can be treated using watery crude extract of fennel vulgare

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#### **Abstract**

Favism is a genetic disease resulting from a deficiency of glucose-6-phosphate dehydrogenase (G6PD). The main objective of this study was to introduce a new natural treatment of favism using the crude watery extract of Fennel vulgare. Four cases with favism were presented. The use of Fennel vulgare watery extract inhibits the development of favism symptoms including hemolytic anemia and consequent pathways. Taken together, favism can be treated using Fennel vulgare.

# **Keywords**

Favism; Fennel vulgare; Watery crude extract; Hemolytic anemia; G6PD deficiency.

#### Introduction

In all cells, glucose-6-phosphate dehydrogenase (G6PD) is a highly conserved housekeeping enzyme and the rate limiting enzyme of the pentose phosphate cycle [1,2]. G6PD is a widely distributed enzyme that has been detected in a wide range of species, including prokaryotes, yeasts, protozoa, plants, and mammals [3]. The most common enzyme deficiency in the world is glucose-6-phosphate dehydrogenase deficiency (favism). It can induce a variety of problems, including neonatal hyperbilirubinemia, acute hemolysis, and chronic hemolysis. This illness can also be asymptomatic in some people [4].

Patients with G6PD deficiency are difficult to detect since they are asymptomatic until they are exposed to triggers. G6PD deficiency is expected to affect about 400 million people worldwide, with considerable genetic variability, making it the most prevalent clinically important enzyme failure [5]. Approximately 200 distinct G6PD pathogenic variants (PVs) have been identified worldwide to far, with each ethnic population having its own mutational profile [6]. Due to oxidative stress, G6PD deficiency (G6PDd) frequently appears as neonatal hyperbilirubinemia or acute hemolytic anemia (AHA). Ingestion of fava beans,

systemic illnesses, or exposure to specific drugs are all common triggers. G6PDd can also cause chronic non-spherocytic hemolytic anemia, which is less prevalent (CNSHA). The severity of the G6PDd, which is decided by the specific PV, is mostly determined by the age of the red blood cells (RBC), the nature of the trigger, and the severity of the AHA in patients with favism. Only a close relationship between the type of genetic abnormality, remaining enzymatic activity, and clinical manifestations allows for phenotyping these patients [7].

Foeniculum vulgare is a perennial, aromatic plant that belongs to the Apiaceae (Umbelliferae) family and comes in a variety of subspecies and variants. Fennel vulgare subsp. vulgare var. Dulce is known as sweet fennel, whereas Fennel vulgare mill. Bitter fennel is the Subsp. vulgare var. vulgare subsp. available commercially and are used medicinally [8]. The plant grows naturally in the Mediterranean region and temperate European countries, but it is now produced for commercial reasons in almost every section of the world. The seeds are ridged, oblong or ellipsoid in shape, aromatic, and have been used medicinally from ancient times as one of the ancient Saxon people's nine sacred herbs, fennel was credited with the power to cure and was valued as a magical herb [9,10]. It was stretched over doorways on Midsummer's Eve in the Middle Ages to protect the family from evil spirits [11]. Fennel is also mentioned extensively in the chilandar medical codex, the best-preserved medieval Serbian text on European medical research from the 12th to 15th century [12]. Fennel was cited as a diuretic and Emmenagogue by famous Greek physicians Hippocrates and Dioscorides, and its juice was said to enhance the eyesight [13]. The fruits are said to improve milk secretion, induce menstruation, ease birth, relieve male climacteric symptoms, and boost libido [14]. It is considered a stimulant, carminative, aromatic, stomachic, Emmenagogue, and Galactagogue in Indian traditional medicine; the fennel fruit water is traditionally used to ease flatulent colic, as well as a diuretic and diaphoretic in children and infants. A heat infusion is used to treat amenorrhea and promote lactation [8], as well as to improve vision and open liver and spleen blockages [15].

# **Study Cases**

We present 4 cases with favism, one for a child, 6 months age and 3 cases for adult males. All of them were diagnosed with favism. We used Fennel vulgare for their treatment. The watery extract of Fennel vulgare was prepared by soaking the Fennel vulgare in hot water for 30 minutes. Following the sensitizing food including bean, a cup of the crude extract was taken. For the child, milk was dissolved in the crude watery extract of Fennel vulgare. In all cases, favism was not developed.

## **Discussion**

The results of this study showed that genetic diseases, such as favism, can be treated using medical herbs. Using Fennel vulgare showed its efficacy in saving the life of people and preventing hemolytic effects and ending the whole adverse effects.

This is a descriptive study that showed the results without logical explanation of the findings. Other in-depth studies are required.

## **Conclusion:**

Favism, a genetic disease can be overcome using Fennel vulgare.

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