

# Favism, A Genetic Disease, Can be Treated Using Watery Crude Extract of Fennel Vulgare

# Ahed J Alkhatib<sup>1,2</sup>\*, Maha Ibrahim Alqdairi<sup>3</sup>, Bodour Saleh Alsalmi<sup>3</sup>, Khudhair Fahad Alharbi<sup>3</sup>, Samar Ali Alamri<sup>3</sup>, Fatmah Abdallah Aldwsri<sup>3</sup>, Abdulaziz Abdullah A Aljaniah<sup>3</sup>, Abdulkareem Nawaf Alotaibi<sup>3</sup>, Manal Muteb Almutairi<sup>3</sup>, Nadia Mubarak Alharthy<sup>3</sup> and Ghazlah Saleh Al Hamdan<sup>3</sup>

<sup>1</sup>Department of Legal Medicine, Toxicology and Forensic Medicine, Jordan University of Science and Technology, Jordan <sup>2</sup>International Mariinskaya Academy, Department of Medicine and Critical Care, Department of Philosophy, Academician Secretary of Department of Sociology <sup>3</sup>Ministry of Health, King Saudi Arabia

\*Corresponding Author: Ahed J Alkhatib, Department of Legal Medicine, Toxicology and Forensic Medicine, Jordan University of Science and Technology, Jordan.

Received: March 31, 2022; Published: April 28, 2022

# 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 till now, 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

*Citation:* Ahed J Alkhatib., *et al.* "Favism, A Genetic Disease, Can be Treated Using Watery Crude Extract of Fennel Vulgare". *EC Clinical and Medical Case Reports* 5.5 (2022): 37-39. Subsp. vulgare var. vulgare subsp. v

#### **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.

# **Bibliography**

- 1. Kletzien R., *et al.* "Glucose-6-phosphate dehydrogenase: a 'housekeeping' enzyme subject to tissue-specific regulation by hormones, nutrients, and oxidant stress". *The FASEB Journal* 8.2 (1994): 174-181.
- Almutairi Meshael Kareem O., et al. "Glucose-6-phosphate dehydrogenase deficiency (G6PD) (Favism) in Dammam, Eastern Province of Saudi Arabia". The Egyptian Journal of Hospital Medicine 70.5 (2018): 713-717.
- Notaro R., et al. "Human mutations in glucose 6-phosphate dehydrogenase reflect evolutionary history". The FASEB Journal 14.3 (2000): 485-494.
- Jennifer E and Frank M. "USA, Martin Army Community Hospital, Fort Benning, Georgia". American Family Physician 72.7 (2005): 1277-1282.
- 5. A Minucci., et al. "Glucose-6-phosphate dehydrogenase laboratory assay: how, when, and why?" IUBMB Life 61 (2009): 27-34.

*Citation:* Ahed J Alkhatib., *et al.* "Favism, A Genetic Disease, Can be Treated Using Watery Crude Extract of Fennel Vulgare". *EC Clinical and Medical Case Reports* 5.5 (2022): 37-39.

38

- 6. A Minucci., *et al.* "Glucose-6-phosphate dehydrogenase (G6PD) mutations database: review of the "old" and update of the new mutations". *Blood Cells, Molecules and Diseases* 48 (2012): 154-165.
- 7. Angelo Minuccia., *et al.* "Molecular basis of favism triggered by ingestion of frozen pumpkin crosscontaminated with fava beans". *Clinical Biochemistry* 69 (2019): 45-47.
- 8. Akbar S. "Fennel (Foeniculum vulgare Mill.): A Common Spice with Unique Medicinal Properties". *Annals of Complementary and Alternative Medicine* 1.1 (2018): 1001.
- 9. Badgujar SB., *et al.* "Foeniculum vulgare Mill: a review of its botany, phytochemistry, pharmacology, contemporary application, and toxicology". *BioMed Research International* (2014): 842674.
- 10. Endalamaw FD and Chandravanshi BS. "Levels of major and trace elements in fennel (Foeniculum vulgari Mill.) fruits cultivated in Ethiopia". *Springerplus* 4 (2015): 5.
- 11. Gori L., *et al.* "Can estragole in fennel seed decoctions really be considered a danger for human health? A fennel safety update". *Evidence-Based Complementary and Alternative Medicine* (2012): 860542.
- 12. Jarić S., *et al.* "Phytotherapy in medieval Serbian medicine according to the pharmacological manuscripts of the Chilandar Medical Codex (15th,16th centuries)". *Journal of Ethnopharmacology* 137.1 (2011): 601-619.
- 13. Dymock W., et al. "Pharmacographia Indica. 1890. Karachi, Pakistan: Reprinted by The Institute of Health and Tibbi Research". Hamdard National Foundation 2 (1972): 124-126.
- 14. Albert-Puleo M. "Fennel and anise as estrogenic agents". Journal of Ethnopharmacology 2.4 (1980): 337-344.
- 15. Kabeeruddin M and Kitabul-Advia". "Vol. II Makhzan-al-Mufradat, Delhi:Aligarh Barqi Press (1937): 57-58.

Volume 5 Issue 5 May 2022 © All rights reserved by Ahed J Alkhatib., *et al.*