

Review on Drug Asafoetida Traditional uses and Pharmacological Activities

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Abstract: *Asafoetida is a herbaceous plant of the Umbelliferae family. It is an oleo gum resin obtained from the rhizomes and roots of plants. Spices are used to aid digestion, as a seasoning for food, and as pickles. In modern herbalism it is used to treat hysteria, some neurological diseases, bronchitis, asthma and whooping cough. It was once used to treat pneumonia and gas colic in babies. Chewing gum has antispasmodic, carminative, expectorant, laxative and sedative properties. The essential oil in gum is released from the lungs, making it perfect for treating asthma. The scent of Asafoetida spreads to the breath, bladder, bloating and stomach burping. Its properties are antispasmodic, expectorant, stimulant, menstrual and anthelmintic. Asafoetida is also used as a sedative. It also reduces blood pressure and blood pressure. In India, it is widely used in food and medicine in Indian medical systems such as Ayurveda.*

Keywords: Ferula Asafoetida, Spice, Umbelliferae

I. INTRODUCTION

As its name suggests, asarum has a disgusting and nauseating taste; These also earned him the nickname “devil’s excrement”. Chewing gum existed in small quantities in the Middle Ages Wearing it around the neck can prevent diseases such as colds and fever. Whatever its usefulness may be, it is a result of the amulet’s antisocial properties rather than its medicinal value. Surprisingly, in Iran, asafoetida is used as food and is called “food of the gods”. This herb is the main ingredient of the famous Ayurvedic herbal formula Hingashtak, whose Sanskrit name is “hing”. In Iran, this plant is highly valued as a condiment and is mixed with almost all dishes. French gourmets spread some asafoetida on the hot plate on which they eat their steak. The unique taste of Worcestershire sauce is achieved by adding this gum. Used in small amounts, it can add flavor to curries, stews, sauces and more. Wisdom makes asafoetida useful in fine perfumes. It is still considered a valuable medicine in Europe, the Near and Far East. As a condiment, it is recommended only to the hearty and the brave. In magic and mythology, asafoetida is used to gain insight and to banish all negative energy, evil spirits and demons. It is used to invoke male gods, especially those of a phallic nature. One myth claims that asafoetida developed from the semen of a god of fertility when it soaked into the earth. Plants constantly make medicines, and lately, great importance has been given to finding new medicines from medicinal plants. Nowadays, many people prefer to use medicinal plants instead of medicines. Asafoetida (Ferula asafoetida Linn): Asafoetida is a gum obtained from the asafoetida plant, which is accepted as food in India and Iran. The Latin name ferula means “carrier” or “vehicle”. Asa is the Latin form of Persian and is also known as “resin”. The Latin word foetidus means “smelly, smelly”. In ancient Rome, asafoetida was stored in jars with pine nuts and used on its own to flavor dishes. Another method is to melt asafoetida in hot oil and add the oil to the food by dropping it. When used in small amounts, asafoetida can enhance the flavor of mushroom and vegetable dishes, and it can also be used to differentiate roasted or grilled meat. Ancient texts describe it as hing, and its continued use over the centuries has given it a special status as a reliable spice and medicine. Its nature and taste are bitter, mild and pungent. Really oily and hot. Ayurvedic literature divides hing into deepniya and sanjna-sthapaka (appetizer and consciousness restorative). It is a popular home remedy and its ingredients are used in many traditional medicines. [1] Asafoetida is used as a flavoring agent and styling agent in many spice blends. It is used in sauces, curries, meatballs, dal and pickles. All of the plants

are used as fresh vegetables. This plant is also used as an antidote to drugs. The effects of the drug will disappear when the same amount of opium is given to the patient. [8]



Fig – 1 Ferula Asafoetida Plant

Origin & Distribution

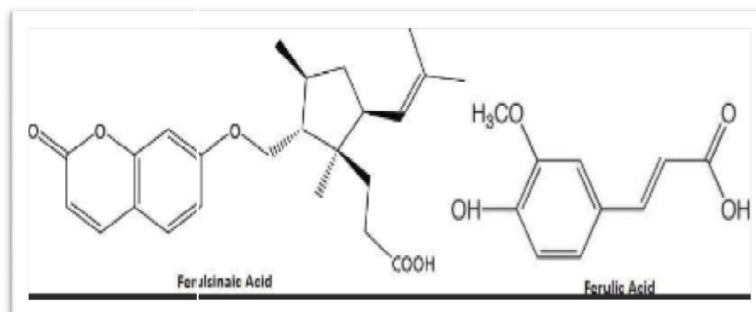
Ferula asafoetida is a perennial plant of the Umbelliferae family. Asafoetida is native to Central Asia, from eastern Iran to Afghanistan, and today it is mostly grown in Iran and Afghanistan, from where it is exported to other parts of the world. It is not native to India but has long been used in Indian medicine and cooking. Other Names: Anhuze (Persian); asafetida (Spanish); asafoetida, awei (Chinese). Aza (Greek); ferule persique or merde dudiabie (France); haltit or tyib (Arabic); hing (Hindi); mvuje (Swahili); stinkasant or teufelsdreck (German), Stinky gum. Asafoetida is obtained from plants of the genus Asafoetida, which have numerous taproot or carrot-like roots and a crown diameter of 12.5-15 cm, aged 4-5 years. Just before the plant blooms in March-April, expose the upper part of the rhizome and cut the stem near the crown. The dome-shaped structure made of branches and soil covers the right place. A milky white juice oozed from the cut. After a few days, when a lot of latex has come out, dig out the exudate and cut off the new roots; sometimes the resin is removed along with the slices. Refill with resin and cut the roots until the leakage stops (about 3 months after the first cut). Resin is sometimes collected by regularly cutting the stem or rhizome where it meets the main root. [10]

Ferula Asafoetida as Traditional medicinal in India

In India, asafoetida has been useful in indigenous medicine since ancient times. It is considered a remedy against wind in the stomach and all spasmodic diseases. It is also a neurostimulant, digestive and sedative. Mix the dry head of Noctiluca with 200-300mg of Asafoetida, take in the morning and evening, treat kidney stones and kidney stones, add potassium nitrate to the mixture to cure old stones Hot decoction of dry stones orally is as follows Show: emmenagogues and heat. The aqueous extract of dried gum is taken orally as a carminative, antispasmodic and expectorant in acute bronchitis. [14] Dried cabbage and rock salt extracts are diluted with vinegar and taken orally as an abortifacient. The use of dried gum resin exudate can prevent dracunculiasis. Chewing gum with added salt and fruit juice can be used to prevent dracunculiasis. External use to treat abdominal pain. [17]

Chemical Constituents

Analysis of Asafoetida shows that it contains 67.8% carbohydrates, 16.0% water, 4.0% protein, 1.1% fat, 7.0% minerals and 4.1% fiber per 100 grams. In addition to its mineral and vitamin content, phosphorus, iron, carotene, riboflavin and niacin, it also contains plenty of calcium. Its Salorific e value is 297 and it contains 40-64% resinous substance consisting of ferulic acid[18], umbelliferone[2.19] and asaresinotannols[18]. Farnesol A, B. and C [20,21] etc. Approximately 25% of gum consists of glucose, galactose, L-arabinose, rhamnase and glucuronic acid [18] and consists of disulfide. Its main components are essential oil (3 -17%), especially 2-butylpropenyl disulfide (E and Z isomers), [22] and monoterpenes (α - and β -pinene, etc.). [2] Free ferulic acid, valeric acid and traces of vanillin (LAF). It has been reported that the unpleasant odor of this oil is mainly due to the presence of disulfide C₁₁H₂₀S₂ [22:23] Many chemical compounds responsible for the drug have been identified.



Pharmacological Activity Of Asafoetida

Antidiabetic Activity

Diabetes is a global epidemic and is considered an incurable disease due to insulin deficiency, affecting 10% of the population. Asafoetida's mechanism of action works on blood sugar control. It has been proven that the effect of Asafoetida on the SOF secretory function of the pancreas is a result of its association with the cell membrane from the carrier. Glut2 glucose enters the β cells of the islet of Langerhans and produces adenosine triphosphate (ATP) during metabolism (26). cytoplasm Asafoetida has high content of calmodulin, which transports calcium in beta cells. The sensitivity of β cells to Ca increases under the influence of other second messengers. It enables insulin to work by stimulating calcium tyrosine kinase. [33]

Antioxidant Activity

Free radicals play an important role in many diseases. Biochemical reactions produce reactive oxygen species that can destroy important biological substances in our bodies. If reactive oxygen species are not removed from cells, disease may occur. This effect of free radicals can be blocked by antioxidants by eliminating free radicals and detoxifying the body. Recent reports indicate that the plant contains essential oils. In this study, asarum was detected by in vitro 1,1-diphenyl-2-trinitrophenylhydrazine (DPPH) and nitric oxide radical scavenging assays, reducing power, linoleic acid, and iron ion chelation. Plants used. Extracts from the aerial parts of Asarum showed good but varying levels of antioxidant activity in all samples examined. These extracts have good Fe chelating ability, DPPH and nitric oxide radical scavenging activity. Further studies of individual compounds identified various antioxidant mechanisms involved. [29]

Anticancer Activity

According to research, in vitro effects of asarum, ginger, cinnamon and cardamom juice and alcohol were found on HEPG2 cancer cells and human breast cell line (MCF7). Chemopreventive growth inhibition analysis. Aqueous and alcoholic extracts of asarum, ginger, cinnamon and cardamom have been shown to be cytotoxic against brain tumors. A decrease in HEPG2 and MCF7 cell populations was observed with the use of this crude product. Several studies have demonstrated the tumor-reducing activity of Asafoetida in mice transplanted intraperitoneally with Ehrlich ascites tumors and oral extracts. Cytotoxicity may be caused by the high content of essential oils in F. Asafoetida is poisonous to poison / 29.3 2.33 due to the essential oil of different Asafoetida species. Sesquiterpenes, coumarins, phenylpropanoids and disulfide compounds are bioactive secondary metabolites obtained from asarum. Stylosin (a monoterpene extracted from meadowsweet) and mogotaxin (a sesquiterpene coumarin obtained from Averula Badla) cause DNA damage and trigger apoptosis. Ferulol, a sesquiterpene prenylated coumarin derivative of Asafoetida, is toxic to plants and has antibacterial and cytotoxicity against human tumor cell lines. Most sesquiterpene coumarins are stored in roots, which can be considered as potential biological agents in the treatment of malignant tumors. F. asafoetida containing ferulic acid and farnesol was reported to inhibit angiogenesis, vascular endothelial growth factor, and growth of Lewis lung cancer in mice. In this study, methanol extract was more cytotoxic than ethanol extract. The yield of asarum resin extract extracted with ethanol (516.1 g) and methanol (558.6 g) was 0.752% and 2390% w/w, respectively. to follow. These results are consistent with previous studies where data showed higher results for anhydrous methanol than ethanol. Some studies have also shown that aqueous and alcoholic extracts have been subjected to in vitro cytotoxicity studies 38 and the results have shown th

aqueous extracts are less likely to be considered cytotoxic to cells than their alcoholic counterparts. Hope. In addition, the inhibitory effect of the aqueous extract is less than the alcoholic extract due to the different content of flavonoids and polyphenols, which are known to have antioxidant and chemopreventive effects. [10]

Antifungal Activity

Black yeast. *Candida albicans*, *Candida cylindrida*, *Candida tropicalis*. Disc diffusion technique was used to identify *Candida null*, *Candida krusei*, *Candida glabrata*, and *Saccharomyces cerevisiae*. The sensitivity of mushrooms to different types of essential oils was compared using ketoconazole as a standard drug. Among the selected spices, asarum oil showed inhibitory activity against all fungal diseases, *Candida tropicalis*, *Candida albicans* MTCC-227, *S. cerevisiae* and *A. niger*, *C. Blanki*, *C. glabrata*, *C. krusei*, *C. Cylindracea*. *Candida albicans* MTCC-3017 ve *C. albicans* NCIM-3100 was observed. Sitara et al. Evaluated antifungal activity of the essential oils extracted from the seeds of neem, mustard, and Black cumin and Asafoetida in 0.5, 0.1, and 0.15% against eight seed borne fungi, viz., *Aspergillus Flavus*, *A. niger*, *Fusarium moniliforme*, *Fusarium oxysporum*, *Fusarium nivale*, *Fusarium Semitectum*, *Drechslera hawaiiensis*, and *Alternaria alternata* comparing with Ridomil Gold (MZ68% WP). The oils extracted from all seeds except mustard showed a variation of the degree of fungicidal activity against experimental species. Asafoetida oil considerably inhibited the growth of all test fungi except. The antifungal and allelopathic effects of the various concentrations of Methanolic extract of Asafoetida oleo-gum-resin against *Pleurotus* spp. And *Trichoderma Harzianum* and were evaluated in a two-culture experiment on agar medium. It shows bacteriostatic and fungicidal properties against *Trichoderma harzianum* and *Pleurotus* sp. At higher concentrations. In vitro evaluation of preparations containing neem oil, nicotinic acid, and F asafoetida and different concentrations of α - and β -unsaturated carbonyl compounds were evaluated against *Leucopterus* ITCC 5226 and *Macrophomina phaseolina* ITCC case 0482. Asarum, prepared as a natural product at a dose of 66 mg/L, may be another important New way to control fungi. Mustafa et al. Remember The antifungal effect of Asafoetida seed oil is important against some plant pathogenic fungi, including bipolar *Sorokiniana* and *Fusarium graminearum*. *Verticillium dahliae*, *A. solani* and *Fusarium solani* were followed in the in vitro design. Asafoetida seed essential oil significantly inhibited the growth of all fungal species compared to the control group. The development of *B. Sorokiniana* is completely inhibited by asafoetida seed essential oil, but the inhibition of other species is largely dose dependent. El Deeb et al., 2012 evaluated the activity of Asafoetida on the in vitro growth of *Blastocystis* sp. Oil and powder asafoetida extracts were incubated separately with cumin (1.25 mg), fenugreek (2 mg), mustard (250 mg) and asafoetida (250 mg). Among these spices, asarum improves pancreatic lipase activity and also stimulates pancreatic amylase. It is thought that the positive effect of consuming many spices in foods containing pancreatic digestive enzymes and the stimulating effects of spices on well-developed digestion may be important. [4] Rao and colleagues also examined the in vitro chemical effect of 14 spices and asarum on rat pancreas and small intestine cells, including exposing them to two different parts of the mixture. [1]

Digestive Enzyme Activity

Generally speaking, since enzymes play a role in digestion, spices improve saliva and gastric juices and promote digestion. The effect of some spices or active ingredients on pancreatic digestive enzymes in experimental mice has been evaluated. Animals are rich in curcumin (0.5 mg), capsaicin (15 mg), piperine (20 mg), ginger (50 mg), cumin (1.25 mg), fenugreek (2 mg), mustard (250 mg). supplemented with a diet for 8 weeks.). Mg) and asafoetida (250 mg). Among these spices, asarum improves pancreatic lipase activity and stimulates pancreatic amylase. The positive effects of many spices on pancreatic digestive enzymes may be important in creating a good digestive stimulant effect from spices. [4] Rao et al. The in vitro effects of 14 spices and asafoetida on digestive enzymes in the mouse pancreas and small intestine were studied, including placing them in a reaction mixture at two different concentrations. Most spices directly affect the pancreatic lipase and amylase enzymes, increasing their activity. [51]

Adverse symptoms

Methemoglobinemia was observed in a 5-week-old black male baby After taking asafoetida. It was determined that he was tachypneic, rumbling and cyanotic due to the effect of methylene blue. (6) Consuming asafoetida in large doses

may cause oily mouth. It is good for stomach disorders such as diarrhea, gas, irritability and headache. It is safe to eat during pregnancy.

Effects of Asafoetida on the stomach

This plant is a good remedy for many stomach ailments. It is an excellent remedy for gas and an important digestive aid. If the stomach is swollen and swollen, asarum should be dissolved in hot water and a cloth soaked pad should be used to apply a hot compress to the stomach. It provides significant protection against intestinal diseases. The 3 mg/kg dose caused spontaneous contraction to decrease to $54 \pm 7\%$ compared to the control group. Exposure of acetylcholine, histamine, and KC1-precontracted ileum to asafoetida extract resulted in force-induced relaxation. Pre-incubation with indomethacin, propranolol, atropine, and chlorpheniramine before exposure to gum did not induce relaxation [25] Asafoetida administered orally to mice at a dose of 2500mg% for 8 weeks reduced phosphatase and sucrose levels in mice. The entire dry powder is administered to adults by inhalation at a dose of 0.2 g over 1 hour. Ethanolic (90%) extracts of dried plants Asafoetida and Cancer were active against human lymphocytes when used in cell culture at a concentration of 0.25 mg/mL. This extract is active against Vero cells at a good dose (ED₅₀ 0.15 mg/mL, Chinese Hamster Ovary (CHO) cells. At a concentration of 500 ug/mL in cell culture, it showed no activity of CA-mammary microalveolar cells [31] Aqueous extract of dry oleoresin was administered to mice by gastric intubation. It was given at a dose of 50 mg/day. Activity against CA Ehrlich acid increased life expectancy (ILS) by 53%. Intraperitoneal injection of the aqueous extract is ineffective against Dalton lymphoma and prolongs life expectancy increased ILS by 4.8%. and CA-Ehrlich acids, 5.5% ILS. [32] Oral administration of the dry product to Sprague-Dawley rats at doses of 1.25% and 2.5% w/w reduced the difference and size of palpable N-methyl-N-nitrosourea-induced mammary tumors and delayed mean onset. Tumorigenesis [33] Oral administration to mice increased survival percentage by 52.9%. Intraperitoneal administration did not lead to a reduction in tumor growth. This extract also inhibited the two-step chemical carcinogenesis caused by 7,12-dimethylbenzanthracene and croton oil in mouse skin, reducing papilloma formation.[34] Apoptosis will be induced when sodium ferulate is administered to humans in lymphocyte cell culture. [35] Gum was active in mice given a dose of 40 mg/g food. This dose is weak compared to carcinogenesis caused by 3-methyl-4 dimethylaminoazobenzene. 7.12-More Compared to dimethylbenzo[a]anthracene, the aqueous extract of dry oleoresin was administered to mice in vitro at a dose of 200 µL/animal. It is more active than croton treatment [30]

Asafoetida as a Gynecological Disease

This herb is considered effective in treating many women-related problems such as pregnancy, gestational age, pregnancy, premature labor, abnormal pain, severe and severe pain, and leukorrhea. Mix about 12 cm of fried mastic with 120 grams of goat's milk and a tablespoon of honey and take three times a day for a month. It stimulates the release of progesterone hormone. Asafoetida is also beneficial for postpartum women. It may be beneficial to take this herb in the postpartum period due to its anti-fat and digestive properties. In southern India, the powder of the herb mixed with rice is given to women after delivery. Methanol extract of the resin, administered orally to Sprague-Dawley rats at a dose of 400 mg/kg daily for 10 days, prevented pregnancy in 80% of the rats When administered as a polyvinylpyrrolidone 1:2 complex, 100% pregnancy inhibition was observed at this dose. Lower doses of the extract produced a marked reduction in the mean number of implantations. Significant activity was observed in the hexane and chloroform eluents of sulfur-containing extract in an immature rat bioassay the methanol extract was devoid of any estrogenic activity [37] A mixture of Embellaribes fruit, Piper longum fruit, borax, Ferula-dried gum Piper betle, Polianthes tuberosa, and Abrus precatorius, administered orally to female adults at a dose of 0.28 g/person starting from the second day of menstruation twice daily for 20 days, without sexual intercourse during the dosing period. Produced the effect for 4 months and the activity was patented for both small and long term effects [38,39] Hot water extract of the plant, administered to female rats, was inactive on estrogen of uterus. The extract is not active in the womb when given to pregnant mice. [40]

Asafoetida and chemoprotective therapy

Dry gum on agar plates against Clostridium perfringens and Clostridium sporogenes [50] Rhizome essential oil at 400 ppm on agar plates against gypsum Microsporum is active and Trichophyton rubrumphyton is not strong. Equi [51]

Asafoetida extract on agar plates at a concentration of 5-10 mg/mL inhibits aflatoxin production by *Aspergillus parasiticus* [52] Ethanol (95%) extract of dried gum on agar plates shows antifungal activity [53] Oleogum resin obtained from roots and stems *Trichomonas vaginalis* [54] Asafoetida treatment reduces cytochrome P450 and b5 levels. Activation of glutathione transferase, deoxythymidine diaphorase, superoxide demutase, catalase and reduced glutathione. Oral administration of asafoetida in the diet at doses of 1.25% and 2.5% increased the development and differentiation of ducts/ducts and lobules and reduced terminal buds compared to rats and mice. Animal control treated with N-Methyl-N-nitrosourea. [33]

II. CONCLUSION

Asafoetida is an oleoresin obtained from the root secretions of *Asafoetida*, a medicinal plant native to Iran. It is widely used as a spice in many foods around the world. It has traditionally been used to treat many diseases such as asthma, epilepsy, stomach ache, bloating, intestinal diseases, indigestion and colds. Recent chemical and biological research has also shown that asafoetida has many activities such as antioxidant, antibacterial, anti-inflammatory, antibacterial, anti-inflammatory pain, antiseptic, hypotensive and molluscan. *Asafoetida* has important medicinal properties and should be studied in detail before clinical studies.

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