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**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1129300>Available online at: <http://www.iajps.com>**Research Article****CAPPARIS A MULTIFUNCTIONAL HERB: EVIDENCE FROM THE
IRANIAN TRADITIONAL MEDICINE TO MODERN MEDICINE.****Saeed Sardai¹, Faramarz Fallahi², Fatemeh Emadi³, Ali Davati⁴, Elnaz Faramarzi⁵,
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dr.esmaeili@yahoo.com**Abstract:**

Today, we see increased public interest in complementary medicine. Iranian Traditional Medicine is one of the most important pillars of the complementary medicine. A variety of herbs are used in Iranian Traditional Medicine to treat diseases. Capparis spinosa (Caper) is one of the herbs that its different parts are used alone or as a mixture with other plants. Today, Caper is known as a nutritional and pharmaceutical plant with unique properties. In this study, properties of Caper proposed in different books are extracted and classified on the basis of affection area. Caper is effective in the treatment of gastrointestinal, infectious, neurological, genitourinary, musculoskeletal, respiratory diseases and so on. The results of the present study are consistent with the findings of modern medicine in many ways. In this study, Capparis spinosa's uses in Iranian Traditional Medicine have been compared with new findings and applications of Caper.

The findings of this study could be the basis for a thorough study of Caper more diverse applications.

Key Word: Capparis spinosa, Iranian Traditional Medicine, Pharmaceutical

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INTRODUCTION:**Backgrounds:**

The health system of most countries is based on conventional medicine; however, recent studies show that the tendency of patients to traditional medicine and complementary therapies is on the rise (1). Iranian Traditional Medicine is one of the oldest traditional medicines (2). To use the vast resources of each traditional medicine, evidence-based studies are carried out on the basis of field and library review investigations. In many books on

Iranian Traditional Medicine have described the large number of medical plants and herbs and their uses are described in detail.

In traditional medicine of Iran, any food substance is divided into four categories in terms of nutritional or pharmaceutical features. Therefore, any food substance is just food (Absolute food) or just drug (Absolute drug) or food with medicinal properties (Pharmaceutical food) or drug with few nutritional properties (Food drug) (3).

Caper and its properties are abundantly discussed in Iranian Traditional Medicine books. Caper has medicinal properties along with few food properties (calories) (4). In recent studies, Caper is often classified with nutritional and pharmaceutical herbs due to its unique bioactive properties (5)

Due to the special properties of Capers, its wide use in traditional medicine books (as will be shown in the following paragraphs), and its unique properties in new findings, it is attempted collect and classify properties of Caper in Iranian traditional medicine.

The present study has been carried out based on library studies. Properties of Caper are classified in terms of their effect area. In the case of the presence of similar or confirmatory studies, they are discussed with necessary explanations at the end of each section.

METHODOLOGY:

In this study, 10 valid sources of traditional medicine from different centuries that were about medicinal herbs or disease treatment were selected. All contents on the properties and application of Caper were then extracted. In the next stage, the findings were classified on the basis of Caper's affection area or its specific features. Finally, more than 200 evidence or new articles of properties and applications of Caper were extracted from Google scholar, Pub med, and Scopus through searching the keyword "Capparis". From among the articles, some of them were selected

based on similarities to the findings of traditional medicine and were used in the discussion section

RESULTS:

Caper with the scientific name of *Capparis Spinosa* L. is of caryophyllaceous family. It is widespread in Mediterranean, Western and Central Asia areas and grows in countries such as Iran, France, Spain, Italy and Algeria, and also Cyprus and Greece (6). It is also found in the wild in different areas of Iran (7).

The overall effects of Caper:

Some properties of Caper are related to its overall effects on the body and the immune system, and some of them are organ-specific. For the ease of access to the findings of this library research, Caper application has been classified in terms of organ or system.

One of the most important general properties of Caper is its Anti poison (as named Teriaq) property. In traditional medicine, any material that can protect the body against damage named "Teriaq". This feature has been directly referred to as toxins treacle in a number of books (3, 8-12)

Iranian Traditional Medicine is a medicine based on the four humors. These humor include "Dam" (Blood), "Soda" (Black bile), "Safra" (Yellow bile), and "Balgham" (Phlegm). In view of traditional medicine when the quantity or quality of the humors changes, leading to diseases (13). The question of what range of material or biochemical activities of body each of humor exactly represent is still not fully understood.

One of the general properties of Caper is removing obstructions due to the sedimentation of some humors (8, 14).

Digestive system and liver**Constipation:**

Caper has a laxative properties (4, 11, 15, 16). Quoting from "Galen", "Masawaiyh" and "Khuzi", "Razi" mentions this property of Caper root in "Al-Hawi" (4). Consuming salted processed Caper fruit is more laxative (3, 4, 8). In some texts fasting consumption of ripe Caper fruit is also known to be laxative (3). Cooked Caper fruit, especially if the seeds are chewed and swallowed, is a strong laxative (12).

Digestion:

Caper fruit helps in digestion, especially if it is salted or processed (10, 15).

Appetite:

Caper stimulates appetite (3, 10), especially if pickled Caper is eaten before the meal (3, 4). Some sources

have mentioned appetizer property of Caper stem (3, 11, 15).

Stomach:

Caper alone is harmful to the stomach. If capers processed with vinegar, causing the stomach to be resistant to the damaging factors (4, 15). From the perspective of traditional medicine, some diseases of the stomach are caused by superfluous substances (superfluous humor). Caper has the ability to clean the stomach and intestines of these substances (4, 16).

Liver:

The liver is one of the major and important members in traditional medicine (the two other ones are heart and brain). Caper processed with vinegar is told to be effective in removing the obstructions of the liver (11, 15, 16). Galen believes that the Caper root has a special property that removes the obstructions of the liver, especially if pickled Caper fruits is eaten with a little olive oil just before meals (4, 15). Some believe that mixture of Caper with vinegar and honey is effective to remove liver obstruction (15). This property is more pronounced in the branches of the Caper plant. The pharmaceutical composition of Capsium, Ruta graveolens and Capparis is effective in removing these obstructions (3, 9, 12, 15).

Hemorrhoids:

Caper can improve hemorrhoids (4, 8). For the treatment of hemorrhoids, Caper incense is used in many cases (3, 10, 11, 15).

Musculoskeletal system:

Joint pain:

Caper has palliative properties in a variety of joint pains (4, 8). Caper improves sciatica (9, 10), even in patients with sensory and movement disorders (4). Caper peel extract enema is very helpful in the treatment of sciatica (8). Caper improves sciatica pain topically (15). Based on traditional medicine, a series pathogens in joint causes disease. "Oribase" believes that Caper helps discretion of disease pathogens (4).

Nervous system:

Caper is effective in improving brain function (3).

Headache:

Caper is used in the treatment of some types of headaches (8).

Sensory and motor disorders:

In Iranian Traditional Medicine, some sensory and motor disorders are referred to as "Khadar" and "Phaleg" (14). Caper alone or in combination with other drugs has been used to treat these two diseases (3, 10, 12, 16).

Genitourinary:

One of the main roles of Caper in gentile system is that it is emmenagogue (4, 8, 15). It also is Aphrodisiac in men and women (4, 8, 9). Caper has diuretic property (3, 11).

Skin:

Wounds:

Capers, dried root bark to treat chronic wounds and purulent used (4, 8, 9, 15). According to Galen, chewing the root of Caper and putting it on these wounds is effective. He believed that this method would debride and dry the wound (4).

Masses:

In traditional medicine, masses or the so-called "Oram" refer to a variety of soft and hard masses in tissues and organs. The masses may be mainly consisted of a humor. Treatment is done on the basis of tumor type (14).

Usage of crushed Caper roots and leaves on lymph masses and other types of masses leads to their shrinkage (4, 8, 9).

Infectious & Parasitic Diseases:

Caper has ant parasitic property. In this regard, these effects are generally mentioned without reference to the type of parasites in the intestinal worms (3, 8). Also mentioned it for the treatment of taenia (tapeworm) (16).

Antipyretic effects:

Along with other properties of Caper, "Khouzi" expresses its effect on reducing fever (4).

Respiratory System:

Pickled Capers is harmful for people with cough (3). On the contrary, salted Capers is useful for the treatment of a form of breathlessness called "Rabv" (probably equivalent asthma) (3, 8, 16).

Spleen:

Spleen is one of the important body parts in traditional medicine because it is responsible for removing the extra "Soda" from the blood. If spleen dysfunctions for any reason, other near or far body parts; specially liver will have disorder because of extra Soda (8, 14). Caper can remove factors preventing the normal functioning of the spleen (15). Splenomegaly (swelling of the spleen): external and internal use of Caper is very beneficial for spleen and swelled spleen (8, 10, 16). Consuming Caper fruit processed in alcohol three times a day can treat splenomegaly (4). Pickled Caper is used for removing obstructions of spleen (anything that disrupts the proper functioning of the spleen) (14). Poulitice of powdered Caper and barley (8, 9) and

eating Capers with Sekanjabin (a traditional medicinal drink that is often prepared by combining variable proportions of vinegar and honey) or anything similar can improve splenomegaly (4, 15). If the Caper root is boiled and drank with vinegar or alcohol (9), it can easily dispose excess mucus accumulated anywhere in the body, especially in the spleen, through kidney or digestive system (4).

Pain killer:

Caper root bark can topically relieve tooth pain (9, 15). Another way to relieve tooth pain is boiling Caper root bark with alcohol or vinegar (16). Poultice of Caper fruit boiled with vinegar also has the effect of teeth pain relief (4, 8). Avicenna has emphasized in his book "Qanun" that if the roots or leaves are fresh, it is more effective (8).

Contraindications of Capers from the perspective of traditional medicine:

Pickled Caper is harmful to intestinal ulcers and diarrhea (11). Consuming Caper alone (without processing with vinegar or salt, etc.) can be harmful to the bladder and kidneys. To remove its harm to the bladder, it is simultaneously or pharmaceutically used with lavender (9) and to remove its harm to the kidney, it is simultaneously or pharmaceutically used with Anisum (15) or *Alpinia officinarum* and honey (9).

DISCUSSION AND CONCLUSION:

Based on the findings of this study, Caper has many different and specific effects on the body from the perspective of Iranian Traditional Medicine.

One of the general effects of Caper is toxin excretion or "Teriaq" (antidote) property. This definition is very similar to the definition of antioxidants, anti-inflammatories, and immune system regulators in terms of prevention of harm to body. According to recent studies, one of the properties of Caper is that it is antioxidant (17), strong anti-inflammatory (18), and immune modularity (19). On the other hand, Caper is hepatoprotective against some toxins and drugs (6). With regard to these similarities, it seems that at least one of the "Teriaq" properties of Caper is related to its strong antioxidant property.

As was mentioned earlier, the positive effect of Caper on spleen has been emphasized in traditional medicine books. Anticoagulant effect of Caper in complement inhibition of coagulation process has been demonstrated in some studies (20). Perhaps with further studies, other anti-thrombotic properties of Caper for improving blood supply and prevent intravascular coagulation can be found. In traditional

medicine, if the extra "soda" is not removed by the spleen, it causes obstruction in blood vessels and ducts (8). The issue that what is contained in soda humor based on the current medicine is beyond the scope of this study.

On the other hand, several studies have been carried out on the impact of splenectomy on blood markers. What is certain is that lipid profile varies in splenectomy (21). From the perspective of traditional medicine, according to new findings, Caper has hypoglycaemic properties (22) and lowers blood lipid (22).

From the perspective of traditional medicine, Caper is useful in the treatment of certain types of liver problems. Mechanisms of the effect of Caper on liver diseases based on Iranian Traditional Medicine, are improvement of spleen performance, toxins excretion, "Soda" and excess "Balgham" excretion from the liver (14). It is not clear in traditional medicine whether each of the four humors has a certain index in the blood or each of them are related to the level of known indices. But there are signs of this relationship. For example, the relationship between "Balgham" and blood lipids has been partly identified in the study of Emtiazi *et al* ed traditional (23).

Capers acts as a powerful antioxidant and anti-virus (19). These properties strengthen the probability of the effect of Caper in the treatment of liver diseases such as viral hepatitis and fatty liver. Based on our findings, pickled Caper is the proposed products for future research that are effective in the treatment of these diseases, in particular fatty liver.

Caper has a positive effect on digestion. Caper, as a seasoning, is widely used in Mediterranean cuisine. The results showed that the use of Caper for seasoning meat and food reduces its oxidative effects.(24).

In traditional medicine, some products of Caper have positive effects on the stomach. The positive effect of Caper in the treatment of *Helicobacter pylori* has been shown in a study (25). To support our findings regarding anti-parasitic properties of Caper, several studies have been conducted (26).

Treatment of constipation with Caper is probably due to the fiber of Caper. Although further investigation is necessary for the impact of other drugs affecting gastrointestinal motility.

Caper is effective in the treatment of hemorrhoids by improving constipation (27). The topical use of

incense Caper for the treatment of hemorrhoids may be due to the antioxidant properties or existence of some materials with vascular repair properties.

There is more need for further studies to support and explain the effect of Caper and its products on the stomach and the treatment of gastrointestinal diseases such as hemorrhoids, constipation and loss of appetite.

Based on the findings of this study with the library study of traditional medicine resources and new evidences, a number of problems and diseases of the musculoskeletal system and possibly some rheumatologic diseases can be treated with Caper. Based on the new findings, Caper protect the cartilage in arthritis attacks. Caper has anti-arthralgia properties. The effect of Caper as an analgesic on painful arthritis may be due to the protective properties against the inflammatory injuries of the joints (28, 29).

One of the applications of Caper and its products is for the treatment of some diseases of the brain and nerves. The recent findings suggest that Caper enhances memory (30). This is my be likely due to better circulation of cerebrovascular and strengthening of neural synapses, which of course needs more documentation. In traditional medicine, the general role of Caper in removing obstructions in the brain is due to the excretion of "Soda". That is, improvement of brain function following the consumption of Caper is due to this property.

Studies have been conducted to support Capers' diuretic properties (31).

Tumors definition in traditional medicine is similar to masses in modern medicine. The masses may have cysts containing "Transudate" or "Exudate", "Phlegmon", "Hematoma", benign or malignant masses. Capers' effect on some cancer cell lines has been examined (32). Caper is one of the spices with anti-cancerous properties (33). Antioxidant, antimicrobial (34), antifungal (35) and anti-viral properties of Caper may be the reason for the loss of some masses or lymphadenopathy with infectious causes. In most of the references, the proposed method for the removal of the masses is topical methods that is not commonly used in modern medicine. Based on the findings, Caper is used in some cancer cell lines based on its cytotoxic properties. Based on the new pharmaceutical findings and technologies, new effects of Caper in the treatment of cancers can be observed.

In a study, anti-allergic and anti-histamine-like properties of Caper extract have been showed (36). Perhaps some anti-asthmatic properties of Caper in traditional medicine are related to these features.

Mixture of Caper with other herbs or different methods of Caper processing may reduce its harmful effects that are not in the pure extract of Caper. There are evidences that Caper extract doesn't have negative effects on the liver, kidneys and pancreas (37).

Further studies in this field in the future could be helpful. However, in traditional medicine, as mentioned above, prescription and preparation of Caper is different. More studies are needed to compare these methods in the treatment of patients.

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