

AN OVERVIEW OF CAPSICUM

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ARTICLE INFO

Short Review

Received 10 March. 2015

Accepted 20 April. 2015

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ABSTRACT

Long time ago, chillies has been used as food, spice and household medicine for several common problem such as high cholesterol, high blood pressure, pain to joint, skin problem, and used as carminative, appetizer, stomachic, beverages, relief of pain in neuropathy and counter irritant in treatment of rheumatism, lumbago. Capsicum baccatum, Capsicum chinese, Capsicum frutescens, and Capsicum pubescence varieties were tested f Two pungent compounds found in Capsicum species (capsaicin and dihydrocapsaicin) were also tested for their anti-microbial effects. or their antimicrobial effects with fifteen bacterial species and one yeast species. While it's biological function is to repel herbivores animals and fungi. Capsicum is derived from the Greek word "Kapsimo" meaning "to bite." [Belonging to family Solanaceae] The therapeutic effect of chillies is due to capsaicin, protein, fixed oil, thiamine and ascorbic acid. This review covers the study of pharmacognosy, pharmacology, its valuable effects, different herbal formulas for various diseases, chillies preparations, marketed formulations along with its major side effects and contraindication

Key words: Kapsimo, thiamine and ascorbic acid

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INTRODUCTION

Capsicum consists of dried ripe fruits of **capsicum annum** linn.var:minimum, belonging to family **solanaceae**. it contains not less than 12% of non volatile ether soluble extractives and It is also known as red or chili pepper. Also known as bell pepper, pepper, jalapeno and chili, the capsicum is rich in beta carotene, capsaicin and vitamins A and C, which are good for preventing a host of diseases, including live disease and impotency. This tangy vegetable is not only used for its medicinal properties, but the strong, spicy flavor is a great culinary ingredient. Chopped into narrow slices, this vegetable tastes great as pizza topping, can be cooked into curries and can be used as seasoning. The natural world once served as the source of all medicinal agents, with higher plants constituting by for the principal sources of these. as model compounds for

synthetic or semi synthetic structure modifications and optimization, as biochemical and pharmacological probes, and as sources of inspiration for generations of synthetic organic medicinal chemists. All plants produce chemical compounds as part of their normal metabolic activities. These can be split into primary metabolites, such as sugars and fats, found in all plants, and secondary metabolites found in smaller range of plants, some useful ones found only in a particular genus or species. It is these secondary metabolites which can have therapeutic actions in humans and which can be refined to produce drugs. natural products and their derivatives and analogs still represent over 50 percent of all drugs in clinical use, with higher plant-derived natural products representing 25 percent of the total.



Figure 1.1:

On numerous occasions, the folklore records of many different cultures have provided leads to plants with useful medicinal properties. In the past 2 centuries, the chemical investigation and purification of extracts of plants purported to have medicinal properties, and hunting poisons in their native habitats, have yielded numerous purified compounds which have proven to be indispensable in the practice of modern medicine. The World Health Organization estimates that 80 percent of the world's population presently uses herbal medicine for some aspect of primary health care. Herbal medicine is a major component in all traditional medicine systems and a common element in Ayurvedic, homeopathic, naturopathic, traditional Chinese medicine, and Native American medicine. Pharmacologists, microbiologists, botanists, and natural-products chemists are combing the Earth for phytochemicals that could be developed for treatment of various diseases. In fact approximately 25 percent of modern drugs used in the United States have been derived from plants. Many of the herbs and spices used by humans to season food yield useful medicinal compounds. Within the last few decades, edema, high blood pressure, heart failure, kidney problems, liver problems, and glaucoma have been considered as the common diseases of man. Medication of these diseases is one of the problems of the people particularly among those of low socioeconomic level because of the high costs of medication. Thus, patients sometimes choose not to medicate at all in the hope that their condition shall resolve by itself. Many people are turning to natural foods and herbs with diuretic properties instead of over the counter and prescription diuretic pills.

TLC has retained favour as an analytical method primarily because of its simplicity, reliability, low cost and selectivity of detection. Of the many chromatographic methods presently available, TLC is widely used for rapid analysis of drugs and drug preparations since it offers several advantages.

MACROSCOPICAL CHARACTERS:

Colour: Dull orange red to brownish-red.

Odour: Characteristic

Taste: Pungent

Size: About 12 to 25cm in length & up to 7mm in width

Shape: It is conical.

APPLICATION: (MOA)

The fruit of the capsicum plant contains a chemical called capsaicin. Capsaicin seems to reduce pain sensations when applied to the skin. Likely Effective for: Pain from rheumatoid arthritis (RA), osteoarthritis, psoriasis, shingles and nerve pain due to diabetes (diabetic neuropathy), when applied to the skin in the affected area. The active ingredient in topical preparations of capsicum, capsaicin, is approved by the Food and Drug Administration (FDA) for these uses.

Possibly Effective for:

Back pain, when applied to the skin. Reducing painful tender points in people with fibromyalgia, when applied to the skin. Relieving symptoms of prurigo nodularis, a skin disease, when applied to the skin. It may take 22 weeks to 33 months of treatment to see a benefit. Symptoms may return after stopping use of capsicum. Cluster headache, when used in the nose. Capsicum seems to reduce the number and severity of cluster headaches. It's best to apply capsicum to the nostril that is on the same side of the head as the headache. Relieving symptoms of perennial rhinitis, a runny nose not associated with allergies or infection, when used in the nose. Sometimes the benefit can last for 6-9 months. Medicinal lotions and creams that contain capsicum extract are likely safe for most adults when applied to the skin. The active chemical in capsicum, capsaicin, is approved by the FDA as an over-the-counter product. That is, it can be sold without a prescription. Side effects can include skin irritation, burning, and itching. Capsicum can also be extremely irritating to the eyes, nose, and throat. Don't use capsicum on sensitive skin or around the eyes. Capsicum extract is likely safe for most adults when taken by mouth, short-term and in amounts typically found in food. Side effects can include stomach irritation and upset, sweating, flushing, and runny nose. It is possibly unsafe to take capsicum by mouth in large doses or for long periods of time. In rare cases, this can lead to more serious side effects like liver or kidney damage. Capsicum extract is possibly safe when used in the nose. No serious side effects have been reported, but application in the nose can be very painful. Nasal application can cause burning pain, sneezing, watery eyes, and runny nose. These side effects tend to decrease and go away after 5 or more days of repeated use.

Special Precautions & Warnings:

Pregnancy and breast-feeding:

Capsicum is likely safe when applied to the skin during pregnancy. But not enough is known about its safety when taken by mouth. Stay on the safe side and don't use capsicum if you are pregnant.

If you are breast-feeding, using capsicum on your skin is likely safe. But it is possibly unsafe for your baby if you take capsicum by mouth. Skin problems (dermatitis) have been reported in breast-fed infants when mothers eat foods heavily spiced with capsicum peppers

Children: Applying capsicum to the skin of children under two years of age is possibly unsafe. Not enough is known about the safety of giving capsicum to children by mouth. Don't do it. Damaged or broken skin: Don't use capsicum on damaged or broken skin.

Surgery: Capsicum might increase bleeding during and after surgery. Stop using capsicum at least 2 weeks before a scheduled surgery. Moderate Interaction Be cautious with this combination Cocaine interacts with capsicum Cocaine has many dangerous side effects. Using capsicum along with cocaine might increase the side effects of cocaine including heart attack and death. Medications that slow blood clotting (Anticoagulant / Antiplatelet drugs) interacts with Capsicum might slow blood clotting. Taking capsicum along with medications that also slow clotting might increase the chances of bruising and bleeding.

Some medications that slow blood clotting include aspirin, clopidogrel (Plavix), diclofenac (Voltaren, Cataflam, others), ibuprofen (Advil, Motrin, others), naproxen (Anaprox, Naprosyn, others), dalteparin (Fragmin), enoxaparin (Lovenox), heparin, warfarin (Coumadin), and others.

Theophylline interacts with Capsicum can increase how much theophylline the body can absorb. Taking capsicum along with theophylline might increase the effects and side effects of theophylline.

Minor Interaction be watchful with this combination

Medications for high blood pressure (ACE inhibitors) interacts with capsicum.

Some medications for high blood pressure might cause a cough. There is one report of someone whose cough worsened when using a cream with capsicum along with these medications for high blood pressure. But is it not clear if this interaction is a big concern.

Some medications for high blood pressure include captopril (Capoten), enalapril (Vasotec), lisinopril (Prinivil, Zestril), ramipril (Altace), and others.

APPLIED TO THE SKIN:

For pain, including arthritis, neuropathy, and fibromyalgia: Creams contain the active capsicum constituent capsaicin and are typically applied 3-4 times daily. It can take up to 14 days for maximum pain relief. Most creams contain 0.025% to 0.075% capsaicin concentrations.

For back pain: Capsicum-containing plasters providing 11 mg capsaicin/plaster or 22 mcg/cm² of plaster applied have been used. The plaster is applied once daily in the morning and left in place for 4-8 hours. For prurigo nodularis: 0.025% to 0.3% of the active capsicum constituent capsaicin 4-6 times daily has been used. Be sure to wash your hands after applying capsaicin cream. A diluted vinegar solution works well. You won't be able to get the capsaicin off with just water. Don't use capsicum preparations near the eyes or on sensitive skin. It could cause burning.

Inside the nose: For cluster headache, 0.1 mL of a 10 mm capsaicin suspension, providing 300 mcg/day of capsaicin, applied to the nostril on the painful side of the head. Apply the suspension once daily until the burning sensation disappears. A capsaicin 0.025% cream (Zostrix, Rodlen Laboratories) applied daily for 7 days has been used to treat acute cluster headache attacks. Putting capsaicin in the nose can be very painful, so a local painkilling medicine such as lidocaine is often put into the nose first.

Chemical constituents:

Its contain about 0.5-0.9% colorless, crystalline & pungent principle, known as capsaicin which is volatile above 65°C. It also contains fixed oil, proteins & pigments, viz. capsanthin & carotene. Pigments are responsible for the red colour. Thiamine & ascorbic acid are other contents of the drug.

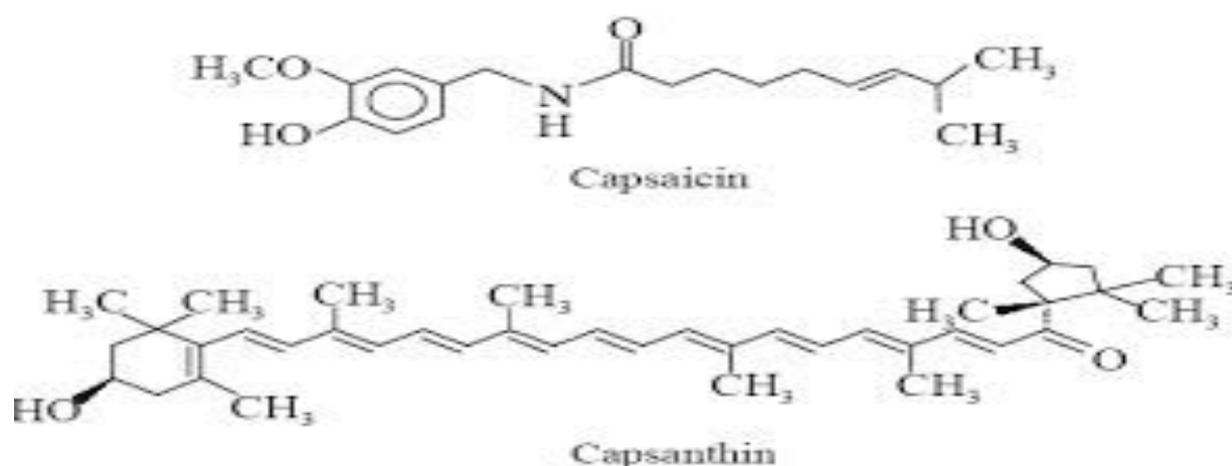


Figure 1.2:

Unlike ginger, the pungency of capsicum is not destroyed by boiling it with 2% solution of sodium hydroxide. but it is destroyed by oxidizing agents like potassium permanganate.

Uses:

- The fruit of the capsicum is used to make medicine. Capsicum is used for various problems with digestion including upset stomach, intestinal gas, stomach pain, diarrhea, and cramps.

- It is used as a carminative, an appetizer & a stomachic.
- It is used as a counter irritant in the treatment of rheumatism, lumbago, neuralgia & spices.
- It is also used for conditions of the heart and blood vessels including poor circulation, excessive blood clotting, high cholesterol, and preventing heart disease.
- Other uses include relief of toothache, seasickness, alcoholism, malaria, and fever. It is also used to help people who have difficulty swallowing. Some people apply capsicum to the skin for pain caused by shingles, osteoarthritis, rheumatoid arthritis, and fibromyalgia.
- It is also used topically for nerve pain (neuropathy) associated with diabetes and HIV, other types of nerve pain (neuralgia), and back pain.
- Capsicum is also used on the skin to relieve muscle spasms, as a gargle for laryngitis, and to discourage thumb sucking or nail-biting.
- This form is used in self-defense pepper sprays.
- Capsicum is used for various problems with digestion including upset stomach, intestinal gas, stomach pain, diarrhea, and cramps. It is also used for conditions of the heart and blood vessels including poor circulation, excessive blood clotting, high cholesterol, and preventing heart disease.
- The fruit of the capsicum plant is used to make medicine. Other uses include relief of toothache, seasickness, alcoholism, malaria, and fever. It is also used to help people who have difficulty swallowing.
- One form of capsicum is currently being studied as a drug for migraine, osteoarthritis, and other painful conditions. A particular form of capsicum causes intense eye pain and other unpleasant effects when it comes in contact with the face. This form is used in self-defense pepper sprays.

Capsicum Health Benefits:

- Capsicum is great for metabolism. The nutrients in these tangy vegetables lower triglycerides in the fat deposits in blood corpuscles. This not only burns extra calories, but also energizes the metabolism.
- A rich source of vitamin A and C, capsicum also has antioxidant properties. These antioxidants combat the free radicals in the body and treat cardiac diseases, cataract, bronchial asthma and osteoarthritis. The vegetable prevents the damage that can be rendered on the body by free radicals, namely, cellular damage and damage to blood vessels and nerves.
- The capsaicin compound in capsicum can block the transmission of pain to the spinal cord from the skin. Thus, including capsicum in meals is good for those undergoing post-operative amputation trauma and herpes.
- The same compound, capsaicin is believed to prevent cancer. This compound prevents carcinogens

from mixing with the DNA. Studies and research also shows that capsicum has cancer-preventing properties.

- Capsicum has blood clotting properties. Vitamin C in capsicum can melt away the blood clots.
- Capsaicin in capsicum can combat food-borne bacteria from affecting the body.
- Capsicum is also used to make a kind of cream, which is used to treat arthritis and shingles.
- Capsicum is also said to aid digestion by increasing stomach secretions. It is also known for its laxative qualities.
- Capsicum is also used to treat chronic rhinitis.
- Low in fat, cholesterol and calories, capsicum is so much more than just a flavoring agent.

CONCLUSION:

The capsicum plaster at the Hegu acupoints decreased the postoperative opioid requirements and opioid-related side effects in patients after orthognathic surgery. Phytochemicals derived from plant sources can act as larvicide, insect growth regulators, repellent and ovipositor attractant and have different activities observed by many researchers. However, insecticides of plant origin have been extensively used on agricultural pests and to a very limited extent, against insect vectors of public health importance. In this study, the larvicidal activity of fruit and leaf extracts of might be attributed mainly to the presence of various phytoconstituents.

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