



Ethnobotanical Uses of Marigold in Ulcer Treatment: A Global Review

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ABSTRACT

Background: The use of marigold flowers (inflorescence, basket-type inflorescence, *Calendula officinalis* flos) as a raw material is well-known in traditional phytomedicine. The majority of its intricate molecular structure is composed of terpenoids and flavonoids. Originally from Southern Europe, marigolds are a hardy annual herb that is also commonly grown in Asia, China, India, and other tropical regions. Yellow is the most common color among the many scents and colors of marigold flowers. The healing and antiseptic properties of calendula (*Calendula officinalis*) include its sudorific and analgesic properties, its influence on the bile duct, its anti-inflammatory, antiviral, and anti-emetic properties, and its ability to tone the skin through vasodilatation.

Objective: Main objective in Marigold leaves Ayurvedic Uses. Benefits for skin. Marigold is beneficial as an antiseptic and an excellent remedy for Ulcer treatment.

Method: . Patients are treated with calendula. Patients receiving officinalis extract (n = 38) and control patients (n = 19) were evaluated every two weeks for 30 weeks, or until their ulcers healed. Among the evaluations were planimetry-based measurement of the wound area, infection control, and clinical aspects of the wounds.

Results: The proportion of treatment patients who attained full epithelialization was 32% in the control group and 72% in the treatment group. The control group experienced a 25% healing time, while the treatment group experienced an average of 12 weeks.

Conclusion When treating oral mucositis in cancer patients, medical professionals have an alternative: a complementary method with analgesic and anti-inflammatory qualities and fewer side effects.

Keywords: marigold, acetic acid, calendula, ulcer, Targetes, patient, terpenoids wounds, treatment.

1. Introduction

Natural plant products have been utilized for a variety of purposes throughout human history(1). Numerous natural products possess biological activity that can be useful in the process of finding and creating new drugs(3). Treatments for a variety of illnesses, including cancer, are mostly plant-based in the Indian medical system known as "Ayurveda"(5). Using naturally occurring red xanthophyll sources has not become more popular in feeding as a means of producing egg yolks with good pigmentation(7). Numerous herbal remedies, either alone or in combination, have been suggested in numerous medical treatises to treat a variety of illnesses(9). These are fast-growing annual flowering plants. Their heights vary from 6 to 8 inches for dwarfs to 10 to 3 feet for medium-sized, tall, upright plants. They bloom for a brief period of time, from midsummer to frost, and bear large, pompon-like double flowers that can reach up to 5 inches in diameter(11). It is a popular garden plant that yields a strong-smelling essential oil that is mostly used to make high-end perfumes.(13). Ayurveda is still widely used and practiced today, coexisting with the modern medical system. Currently, 30% of medications are derived from natural sources(15). Many plant species and natural products made from plants are used to treat infectious diseases in the indigenous health care delivery system(17). One abundant source from which antimicrobial agents can be derived is medicinal plants. Many nations use plants as medicine, and they are the source of numerous strong and effective medications.(19).

1.1 TAXANOMICAL CLASSIFICATION

Kingdom : Plantae

Order : Asterales

Family : Asteraceae

Subfamily : Asteroideae

Class : Magnoliopsida

Division : Magnoliophyta

Genus : Tagetes

Species : erecta



Fig.no.1 Marigold

1.2 Traditional uses

The leaves are said to be beneficial for wounds, ulcers, kidney problems, muscle aches, and piles(21).The pounded leaves are used as an external application to boils and carbuncles(23).

1.3 Some of the major tagetes

1.3.1 African or American Marigolds

These marigolds grow to a height of three feet, tall and erect. The flowers are big and shaped like globes(25). Flowers can have a diameter of up to 5 inches(27).Beautiful bedding plants are African Marigolds(29).There are no red marigolds among these yellow to orange blooms. Compared to the French variety, Africans take longer to reach the flowering stage(31).

1.3.2 French Marigolds (*Tagetes patula*):

This group of marigold cultivars ranges in height from 5 to 18 inches(33). The colors of flowers are orange, yellow, and red(35). Bicolor patterns in red and orange are also present(37).The flowers measure two inches in diameter. French marigolds are great in large plantings and as a border for flowerbeds(38). They thrive in window boxes and containers as well(40).

1.3.3 Signet Marigolds (*T. signata 'pumila'*):

Compact plants with finely divided, lacy foliage and clusters of tiny, single flowers are produced by signet marigolds(42). Their edible flowers range in color from yellow to orange(44). The flavor of the signet marigold flowers is spicy, similar to tarragon(46). There's a nice lemon scent to the foliage(48). Plants like signet marigolds work well in window boxes and as bed edging(49).

1.3.4 Mule Marigolds:

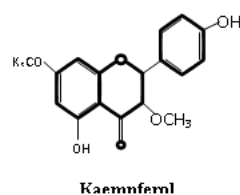
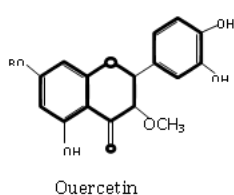
Mule marigolds are so named because they are sterile hybrids of dwarf French marigolds and tall African marigolds(51).The majority of triploid cultivars reach heights of 12 to 18 inches(53). Their germination rate is low even though they possess all of their parents' traits(55).

2. Chemical constituents

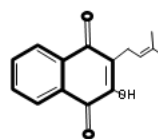
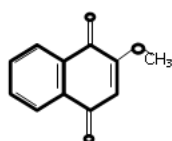
1. Flavonoids, such as isorhamnetin, kaempferol, and quercetin
2. Saponins (oleanolic acid, calendulose)
3. Triterpenoids (ursolic acid, luteol)
4. Carotenoids (zeaxanthin, lutein).
5. Oils that change quickly (calendula oil)
6. Polysaccharides (polysaccharide from calendula) (57).

3. Chemical structure

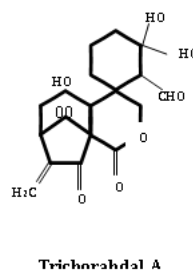
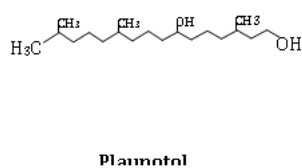
Flavonoids



Quinones



Terpenoids



4. Pharmacological Action

4.1 .1 Antibacterial activity :

Rhama and Madhavan reported that several *Tagetes erecta* flower solvents had antibacterial properties against the following bacteria: *Pseudomonas aeruginosa*, *Proteus vulgaris*, *Alcaligenes faecalis*, *Campylobacter coli*, *Escherchia coli*, *Streptococcus mutans*, *Streptococcus pyogenes*, *Bacillus cereus*, *Klebsiella pneumoniae*, and *Escherchia coli* (59). Patrick et al. (2011) found that the *Neisseria gonorrhoeae* strain was most inhibited by the flower parts (60).

4.2 Anti-inflammatory:

properties In an animal model of ulcerative colitis, Meurer et al. examined the intestinal anti-inflammatory qualities of *Tagetes erecta* dry hydroalcoholic extract (DHETE), which is rich in the carotenoid lutein (53). Carrageenan-induced paw edema in rats and acetic acid-induced writhing in mice were used to illustrate *Tagetes erecta*'s anti-inflammatory and anti-nociceptive qualities (34).

4.3 Anti-Cancer Activity

The *Tagetes erecta* ethanol extract was directly subjected to an offline two-dimensional preparative high performance liquid chromatography method using a real-time cell analysis system (20). Marigold has long been used as a medicinal herb for a variety of therapeutic purposes (45).

4.4 Anti-oxidant activity

Antioxidants are compounds that can help protect cells from damage caused by harmful substances called free radicals (7). Glutathione levels in the blood and liver are significantly raised by the extract (8).

4.5 Wound healing activity

Ibrahim et al. documented the ability of carbopol gels made from hydroalcoholic extracts of *Tagetes erecta* Linn. and *Gymnema sylvestere* (GE) to heal wounds . (TE) in albino mice's burn and excision wound models (44). While animals treated with combined gel showed accelerated wound healing activity, possibly as a result of synergism, animals treated with GE and TE showed a notable reduction in the duration of wound contraction and epithelization in burn and excision wound models (33).

4.6 Ulcer treatment activity

Both water and alcoholic extract demonstrated antiulcer activity . In the case of aspirin-induced stomach ulcers and pylorus ligation, water extract proved to be more effective than alcoholic extract when compared to regular ranitidine (22).

4.7 Anti-fungal activity

The essential oil of *Tagetes erecta* leaves has antifungal qualities . It completely inhibits the growth of *Pythium aphanidermatum*, a damping-off pathogen, at 2000 ppm (37).

5. Clinical study

5.1 Studies on Humans:

In a 2015 randomized, double-blind, placebo-controlled study, 60 patients received 500 mg/day of marigold extract or a placebo for six weeks in order to treat gastric ulcers. Marigold significantly reduced ulcer size and symptoms (10).

5.2 The source is Alternative and Complementary Medicine.

1. Treatment of Duodenal Ulcer: In a prospective, open-label study carried out in 2018, forty patients received topical application of Marigold ointment for four weeks. Marigold improved ulcer healing and significantly reduced symptoms (40).

5.3 The source is pharmacy and pharmacology.

1. Wound Healing: Fifty patients received topical marigold application or standard wound care in this 2012 randomized controlled trial (2). Marigold accelerated wound healing and strengthened tissue (4).

5.4 Wound Care is the source.

Research on Animals

1. A 2011 study on the prevention of gastric ulcers Rats were administered either omeprazole (20 mg/kg) or marigold extract (200 mg/kg) prior to the development of ethanol-induced gastric ulcers (6). Marigold prevented ulcers from forming (8).

5.5 The source is ethnopharmacology.

1. Duodenal Ulcer Healing: A 2016 Study Rats were administered either marigold extract (400 mg/kg) or ranitidine (20 mg/kg) for 14 days (10). Marigold fast-tracked ulcer healing (12).

5.6 The source of pharmaceutical biology

1. Reduced Inflammation: Mice in a 2013 study were administered either 100 mg/kg of marigold extract or 10 mg/kg of indomethacin before inflammation brought on by carrageenan(14).Marigold reduced inflammation (16).

5.7.Experiments in Medicine:

The study, "Marigold Extract for Treatment of Gastric Ulcers" (NCT03504415), is randomized, double-blind, and placebo-controlled (22).

2. Marigold Ointment for Wound HHealin (NCT02554211) was the subject of a randomized, controlled trial (24).

6. Studies on toxicity:

6.1 Acute Toxicity Research:

1. The lethal dose (LD50) for mice is 5-7 g/kg (intraperitoneal) and 10-13 g/kg (oral), which corresponds to 50% mortality (26). 2. Rats given 5 g/kg orally did not die (28).

6.2 Subchronic Toxicity Research:

Rats given 1000 mg/kg/day did not exhibit any adverse effects in a 90-day oral toxicity study (30). 2. 1000 mg/kg/day did not result in any irritation or toxicity in a 28-day study on rabbit dermal toxicity (32).

6.3 Chronic Toxicity Research:

1. 500 mg/kg/day did not cause cancer in rats in a 6-month oral toxicity study (34).
2. 200 mg/kg/day did not cause any adverse effects in a 12-month oral toxicity study in dogs.(35).

6.4 Genotoxicity Studies:

1. Ames test results: negative; not mutagenic (37). 2. Micronucleus test: negative, non-clastogenic (39).

6.5 Research on Toxicity to Reproduction:

1. Rat teratogenicity study: No fetal abnormalities were seen at 1000 mg/kg/day (41). 2 A 500 mg/kg/day. No effects on fertility or reproductive performance were found in a study on reproductive toxicity in rats (43).

6.6 Allergic Reactions and Hypersensitivity:

Occasionally, allergic contact dermatitis occurs (45). 2. Systemic hypersensitivity reactions have not been reported (47).

6.7 Connections to Other Substances:

1. May conflict with blood thinners (e.g., warfarin) (48). 2. May interact with diabetes medications, such as metformin. interaction potential with immunosuppressants, such as cyclosporine (50).

6.8 Disabling Conditions:

1. Nursing and pregnancy (inadequate data) (52). 2. A recognized sensitivity to marigolds or the Asteraceae family.(56)

6.9 Suggested Amount:

1. Oral: 500–1000 mg of dry extract per day (60). 2. Topical: 5–10% marigold extract (23).

7. Conclusion:

Tagetes species are one type of bedding plant that is frequently utilized as a cover crop (43). African marigolds (*T. erecta*) and French marigolds (*T. patula*) are the two varieties of these plants that are most commonly used (46). Using *C. officinalis* to cure UC can expand the range of treatment options available (68). *officinalis* and potential therapies for rats suffering from ulcerative colitis (30). According to our findings, *calendula officinalis* extract may be a helpful treatment for VLUs (42). *Calendula officinalis* extract accelerated the healing process in hamsters suffering from oral mucositis (13).

8.Referencess:

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