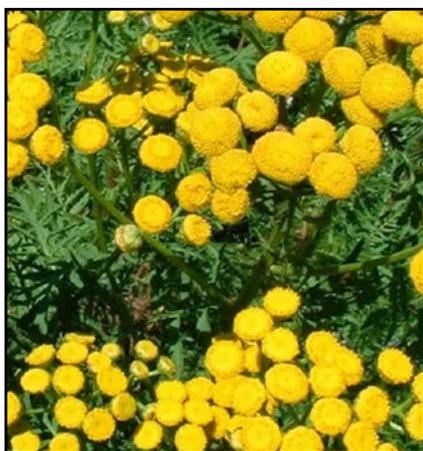


# Blue tansy

By Salvatore Battaglia



Rocky Mountain Oils, (2015). *Tanacetum annuum* [ONLINE]. <https://www.rockymountainoils.com/learn/blue-tansy-essential-oil-uses/> [Accessed 1 June 2020].

## BOTANICAL NAME

*Tanacetum annuum*

## FAMILY

Asteraceae

## SYNONYMS

Annual tansy, Moroccan blue tansy, Moroccan blue chamomile<sup>1,2,3</sup>

There is some confusion in the naming of the oil. It is also referred to as Moroccan chamomile, which is the common name assigned to *Ornithoglossum polycaule*.

Blue tansy oil is a relative newcomer to aromatherapy pharmacopeia. It has a soothing, blue colour and delicate, sweet herbaceous aroma, which is comforting to the body, mind and soul. I find the scent of blue tansy relaxing, reassuring and nurturing.

Peter Holmes beautifully describes the gentle qualities of blue tansy on our psyche:

*... it exerts a calming effect that works well in anxiety states, agitated depression and acute panic states in particular. Moreover, it can help provide emotional stability in the presence of conflicting distressing feelings, rigid attitudes and general negativity.*<sup>1</sup>

I believe blue tansy is a very important essential oil to assist during these challenging times involving social distancing. It is not surprising Holmes suggests blue tansy oil can assist us in making our relationship to the world and others a more flowing, adaptive, spontaneous and dynamic one.<sup>1</sup>

## METHOD OF EXTRACTION

Blue tansy essential oil is steam distilled from the fresh herb as soon as the first flower buds appear.<sup>1</sup>

## BOTANY AND ORIGINS

Blue tansy is an annual yellow-flowered Mediterranean plant that grows in northern Morocco. It may be easy to confuse Blue tansy with Moroccan chamomile. Schnaubelt commonly refers to *T. annuum* as Moroccan chamomile.<sup>3</sup>

## CHARACTERISTICS

Blue tansy essential oil is a deep blue coloured oil with an intense, sweet-fresh herbaceous and fruity aroma with a subtle, camphoraceous overtone.

## CHEMICAL COMPOSITION

The analysis of blue tansy oil steam distilled from the fresh aerial parts of *T. annuum* from Morocco identified more than 130 constituents. The major constituents were chamazulene (17-38%), myrcene (1-14%), sabinene (4-8.6%),  $\beta$ -eudesmol (3-7%), and camphor (4-18%). Seasonal variation of the oil composition indicated that the chamazulene content decreases and the myrcene content increases from June to October.<sup>4</sup>

The chemical composition of *T. annuum* essential oil from Morocco was reported as follows:

$\alpha$ -thujene (0.44%),  $\alpha$ -pinene (2.66%), camphene (0.91%), sabinene (14.4%),  $\beta$ -pinene (4.77%), myrcene (3.89%),  $\alpha$ -phellandrene (5.56%),  $\alpha$ -terpinene (1.14%), p-cymene (5.54%), limonene (2.35%), 1,8-cineole (0.56%),  $\gamma$ -terpinene (1.81%), terpinolene (0.62%), camphor (8.73%), borneol (1.92%), terpinen-4-ol (1.92%),  $\alpha$ -terpineol (0.17%),  $\beta$ -elemene (0.24%),  $\beta$ -caryophyllene (2.01%),  $\beta$ -funebrene (1.0%), humulene (0.18%),  $\gamma$ -curcumene (0.29%),  $\beta$ -selinene (0.67%), bicyclogermacrene (0.78%), 3,6-dihydrochamazulene (12.94%), chamazulene (13.01%).<sup>5</sup>

---

## SESQUITERPENE LACTONES

Schnaubelt states the sesquiterpene lactones found in blue tansy oil provide the oil with excellent anti-inflammatory activity, which he suggests are better suited at the early stage of the inflammation cascade. He bases this comment on research that confirms sesquiterpene lactones display potential anti-inflammatory activity through the NF-κB pathway.<sup>6</sup>

NF-κB is a protein which mediates immune response in humans by controlling the response of other effectors such as cytokines, inflammatory molecules and cell adhesion molecules. It is also involved in cancer by genetic regulation of apoptosis pathways and metastasis. The inhibition of the NF-κB complex reduces the inflammatory response and inhibition of cancer growth.<sup>7</sup>

Many sesquiterpene lactones found in plants of the Asteraceae plant family are biologically active and have significant pharmacological activities such as anti-inflammatory, antileukemic, antimicrobial, antioxidant, tumor-inhibiting, cytotoxic and immunostimulating properties. Sesquiterpene lactones are predominantly found in the aerial parts of the plant.<sup>8,9,10,11,12</sup>

As I was reading about sesquiterpene lactones I was becoming more and more excited about their diverse biological activities. I had previously understood them to be allergens and to be dermal sensitizing, as is the case for elecampane.

However, we have one major dilemma. Upon examining the chemical composition of the hydro-distilled blue tansy essential oil, I could not find any sesquiterpene lactones and guess what: it is unlikely you will find any.

Some sesquiterpene lactones are converted into sesquiterpene hydrocarbons during steam distillation. For example, achillin, also known as santolin, a sesquiterpene lactone found in yarrow is converted into chamazulene during steam distillation. Matricin, a sesquiterpene lactone found in German chamomile, is converted into chamazulene during steam distillation.<sup>13</sup>

Price & Price point out sesquiterpene lactones only occur in the expressed oils and some absolutes as their molecular weight of sesquiterpene lactones is too great to allow distillation.<sup>14</sup>

Holmes does not list any sesquiterpene lactones in the typical constituents found in blue tansy oil.<sup>1</sup> While sesquiterpene lactones are prolific in plants of the Asteraceae family, they are usually only found in the ethanol or solvent extracts.

Some of the most popular herbs used in herbal medicine such as arnica, elecampane and feverfew all attribute their therapeutic activity to sesquiterpene lactones. Arnica flowers are typically prepared for topical application for the treatment of bruises, insect bites, muscular aches and sprains, chronic venous insufficiency and superficial phlebitis. Arnica flowers contain the sesquiterpene lactone, helenalin.<sup>15</sup>

Feverfew, whose botanical name is *Tanacetum parthenium*, is well known for the treatment of migraine headaches and associated symptoms. The key sesquiterpene lactone that has been identified in feverfew is parthenolide.<sup>15</sup>

While elecampane essential oil should not be used on the skin, the herbal extract is commonly used in Western herbal medicine for catarrhal conditions and chronic disorders of the respiratory tract associated with the common cold and influenza. The key sesquiterpene lactones identified in elecampane root are alantolactone and isolantolactone.<sup>15</sup>

The therapeutic potential of sesquiterpene lactones is very exciting. However, I do not necessarily believe hydro-distilled essential oils are the best sources of sesquiterpene lactones. When reading research papers, we must be very clear in interpreting if an essential oil or an extract was used in the study.

---

## ADULTERATION

Holmes states there is a moderate chance blue tansy oil may be adulterated with white mugwort, *Artemisia herba alba*, which has a similar yet different scent and colour. The oil may be reconstituted with yarrow, German chamomile and Moroccan wild chamomile.<sup>1</sup>

---

## HISTORY AND TRADITIONAL USES

### History

Holmes states French medical and herbal practitioners have long acknowledged the therapeutic qualities of blue tansy oil. It has long been used for its excellent anti-inflammatory, antiallergic and analgesic properties.<sup>1</sup>

### Herbal

Literature reviews reveal the *Tanacetum* species have been used as herbal remedies since ancient times. The review states an ever-increasing interest in the species of *Tanacetum* due to the essential oils, bitter substances and the presence of sesquiterpene lactones present. There are over 200 *Tanacetum* species distributed throughout the world, most commonly found in the arid and semi-arid regions of subtropical and lower temperate latitudes.<sup>16</sup>

The same review profiles the chemistry of many *Tanacetum* species. However, *T. annuum* is not among them, which suggests it has never been as popular in traditional herbal medicine as some of the other more commonly species such as *T. parthenium*, commonly known as feverfew, which is well known for the treatment of migraines, tension headaches and associated symptoms.<sup>16</sup>

---

## PHARMACOLOGY AND CLINICAL STUDIES

While there are very few scientific studies examining the properties of blue tansy, much is known about one of the important chemical constituents found in the oil – chamazulene. Chamazulene gives the oil its bright, blue colour and is known for its anti-inflammatory properties.

### Antifungal activity

Blue tansy essential oil was screened for its antifungal activity against *Botrytis cinerea*, *Helminthosporium oryzae*, *Alternaria solani*, *Piricularia oryzae* and *Verticillium dahlia*. The oil exhibited the strongest fungitoxicity by completely inhibiting the mycelial growth of each of the fungi at 5000 ppm.<sup>4</sup>

### Antioxidant activity

Chamazulene isolated from essential oils was found to have a total higher antioxidant activity than ascorbic acid, α-tocopherol and butylated hydroxytoluene (BHT).<sup>17</sup>

---

Other invitro studies have also confirmed the antioxidant activity of chamazulene in endothelial cells due to oxidative stress. The study suggested further studies examine the potential uses of chamazulene in delaying the onset of vascular dysfunction and maintaining or restoring vascular health.<sup>18</sup>

#### Anti-inflammatory activity

One study concluded chamazulene, but not matricine, contributes to the anti-inflammatory activity of chamomile extracts by inhibiting the leukotriene synthesis and antioxidative activity.<sup>19</sup>

Chamazulene occurring in German chamomile, yarrow and other Asteraceae species was isolated and found to inhibit cyclooxygenase-2, but not cyclooxygenase-1. It was found to have an anti-inflammatory activity in several animal models with local and systemic application.<sup>20</sup>

#### Insecticidal activity

The acridicid (killing grasshoppers) activity of blue tansy essential oil was examined. It was found to exhibit toxic effect on the survival of adult locusts. The authors of the study concluded blue tansy oil should be considered in the formulation of a natural alternative for controlling insects.

#### Actions commonly cited in aromatherapy

Actions often attributed to the blue tansy oil include analgesic, antibacterial, antifungal, anxiolytic, antioxidant, antispasmodic, anticatarrhal, sedative.<sup>1,3,22,23</sup>

---

## AROMATHERAPY USES

### Clinical aromatherapy

#### Cardiovascular

Holmes states blue tansy is a cardiovascular relaxant and is recommended for hypertension.<sup>1</sup>

#### Anti-inflammatory and analgesic

Holmes indicates blue tansy is a strong anti-inflammatory and analgesic and recommends using it for the treatment of inflammatory conditions associated with the nervous, dermal, digestive, respiratory and musculoskeletal system. He recommends blue tansy for conditions such as acute dermatitis, gastritis, enteritis, stomatitis, arthritis, fibromyalgia, neuritis, neuralgia, tendinitis, plantar fasciitis and bursitis.<sup>1</sup>

#### Nervous system

Blue tansy oil may be used for reducing stress, anxiety and nervous tension. Holmes explains blue tansy oil calms the mind and promotes relaxation and recommends using it to alleviate nervous tension, restlessness, anxiety, insomnia and agitated depression.<sup>1</sup>

#### Psychological

Holmes states blue tansy oil helps to promote emotional stability and renewal and recommends using it to alleviate emotional instability, with distressed feelings and mental/emotional conflict associated with lack of flexibility.<sup>1</sup>

#### Respiratory system

Holmes indicates blue tansy oil is a respiratory relaxant and recommends using it as a bronchodilator and spasmolytic for all asthmatic conditions including whooping cough, emphysema and bronchial asthma.<sup>1</sup>

### Skin care

In *Medical Aromatherapy*, Schnaubelt states blue tansy, which he refers to as Moroccan chamomile, has good antihistaminic and/or antiallergenic properties. He also states when used in a blend for external application, it can make a powerful anti-inflammatory treatment for painful sunburns, and situations where the skin is damaged.<sup>22</sup>

Schnaubelt states blue tansy is an obligatory essential oil in any blend for burns, sunburn and inflamed or damaged skin. He recommends a rejuvenative blend with blue tansy oil, everlasting, lavender and roman chamomile for damaged, irritated and sensitive skin.<sup>23</sup>

### Energetics, psyche and subtle uses

#### Energetics

The energetic qualities of blue tansy are cooling, indicating it will have a strong affinity in balancing excess *Qi* associated with the Wood and Fire Elements.

According to Holmes, it calms the *Heart* and *Shen*. Hence, it is recommended for harmonising the *Shen*, which is associated with conditions such as irritability, mood swings, restlessness, nervous tension, anxiety and insomnia. Holmes also recommends blue tansy for *Heart Yin* deficiency with *Shen* agitation, which is associated with anxiety, worry at night, restlessness, fearfulness, insomnia and palpitations.<sup>1</sup>

#### Personality

According to Myers-Briggs personality types, I believe the blue tansy personality is likely to be an INFP. This is the healer archetype.

INFPs are gentle, calm, easy going and affirming. Integrity and commitment to what they believe in is essential. They like time alone for their many interests. They like learning and researching new things and interests. They are highly reflective, especially in understanding the mysteries and meaning of life. They dislike rules, orders, schedules and deadlines and they have little need to impose their values on others. They prefer to gently influence and inspire. They can be indecisive because they have difficulty discerning what is most important to them. They value authenticity and depth in their relationships and are loyal, devoted and committed to family and friends. They are deeply caring but can appear indifferent and or antisocial.

#### Subtle

I associate blue tansy oil with the throat chakra. However, I agree with Holmes who states blue tansy is ideal for the solar plexus chakra as it softens, relaxes and expands this area. He explains it is ideal whenever one experiences rigid thinking, a lack of flexibility and needs to remain in control and is unable to let go of difficult issues.<sup>1</sup>

---

## DOSAGE AND ADMINISTRATION

### Blending

#### Aromatherapy

Some synergistic blends using blue tansy essential oil may include:

- **Blue tansy + *Santalum album***: anti-inflammatory for sensitive skin

- 
- **Blue tansy + Kunzea:** alleviate pain – arthritic, sprains and strains and all soft tissue pain.
  - **Blue tansy + cypress:** bronchodilator for alleviating asthmatic condition.
  - **Blue tansy + Everlasting:** ideal for wound healing and skin allergies.
  - **Blue tansy + lavender:** ideal for alleviating nervous tension, stress and anxiety.
  - **Blue tansy + bergamot:** ideal for alleviating depression and lack of inflexibility.
  - **Blue tansy + German chamomile:** soothing anti-inflammatory for dermatological conditions such as dermatitis.
  - **Blue Tansy + neroli:** ideal for restlessness, anxiety and insomnia.
- 

## MODE OF ADMINISTRATION

### Bath

Full body bath, foot bath

### Topical

Compress, massage, ointment, skin care

### Inhalation

Direct inhalation, diffuser, oil vapouriser

---

## SAFETY PROFILE

### General safety

Schnaubelt states the oil is nontoxic and it can be used liberally in preparations for topical or inhalation use free of risks.<sup>23</sup>

Holmes states the oil is not a skin-irritant and non-sensitizing. He states because of its untested hormonal action, internal use of blue tansy should it should be avoided with oestrogen-dependent cancers and during the first trimester of pregnancy.<sup>1</sup>

Please do not mistakenly use *Tanacetum vulgare*, another species of *Tanacetum*, as *Tanacetum annuum*.

*T. vulgare* oil is a yellow to pale-blue in colour with over 60% thujone. Blue tansy does not contain any of the neurotoxic ketones found in tansy oil – *Tanacetum vulgare*.

### Contraindications

Tisserand & Young recommend caution in using blue tansy by all routes. Since chamazulene inhibits CYP1A2, CYP3A4 and CYP2D6, there is a theoretical risk of interaction between blue tansy oil and drugs metabolised by these enzymes.<sup>2</sup> However, Bone & Mills cite the same invitro study and state the clinical relevance of such in vitro findings is uncertain.<sup>24</sup>

---

---

## REFERENCES

1. Holmes P. *Aromatica: a clinical guide to essential oil therapeutics – Vol. I*. Singing Dragon, London, 2016.
2. Tisserand R, Young R. *Essential oil safety*. 2nd edn, Churchill Livingstone, Edinburgh, 2014
3. Schnaubelt K. *Advanced aromatherapy – the science of essential oil therapy*. Healing Arts Press, Rochester, 1998.
4. Greche H et al. *Composition of Tanacetum annuum L. oil from Morocco*. Journal of Essential Oil Research. 1997;11(3):343-348. doi: 10.1080/10412905.1999.9701150
5. *Perfect Potion Certificate of Analysis – Blue Tansy*. Southern Cross University, 2019.
6. Schnaubelt K. *The healing intelligence of essential oils – the science of advanced aromatherapy*. Healing Arts Press, Rochester, 2011.
7. Chadwick M et al. *Sesquiterpenoids Lactones: benefits to plants and people*. International Journal of Molecular Sciences. 2013;14:12780-12805. doi:10.3390/ijms140612780
8. Bosco A, Golsteyn RM. *Emerging anti-mitotic activities and other bioactivities of sesquiterpene compounds upon human cells*. Molecules. 2017;22:459. doi: 10.3390/molecules22030459
9. Babaei G et al. *Application of sesquiterpene lactone; a new promising way for cancer therapy based on anticancer activity*. Biomedicine & Pharmacotherapy. 2018. doi: 10.1016/j.biopha.2018.06.131
10. Chaturvedi D. *Sesquiterpene lactones: structural diversity and their biological activities*. Opportunity, challenge and Scope of Natural Products in Medicinal Chemistry. 2011:313-334.
11. Choudhary S, Mishra PK. *A review on pharmacognosy of bioactive sesquiterpene lactones*. International Journal of Pharmacognosy and Phytochemical research. 2019; 11(3):116-121. doi: 10.25258/phyto.11.3.4
12. Matejic J et al. *Pharmacological activity of sesquiterpene lactones*. Biotechnology & Biotechnological equipment 2014. doi: 10.1080/13102818.2010.10817819
13. Hoffmann D. *Medical herbalism: The science and practice of herbal medicine*. Healing Arts Press, Rochester, 2003.
14. Price S, Price L. *Aromatherapy for health professionals*. 4th edn, Churchill Livingstone, Edinburgh, 2012.
15. Bone K. *A clinical guide to blending liquid herbs*. Churchill Livingstone, St Louis, 2003.
16. Kumar V, Tyagi D. *Chemical composition and biological activities of essential oils of genus Tanacetum a review*. Journal of Pharmacognosy and Phytochemistry. 2013;2(3):155-159.
17. Capuzzo A. et al. *Antioxidant and radical scavenging activities of chamazulene*. Natural Product Research. 2014;28(24):2321-2323. Doi: 10.1080/1478619.2014.931393
18. Querio G et al. *Chamazulene attenuates ROS levels in bovine aortic endothelial cells exposed to high glucose concentrations and hydrogen peroxide*. Frontiers in Physiology. 2018; 9:246. Doi: 10.3389/fphys.2018.00246
19. Safayhi H et al. *Chamazulene: an antioxidant-type inhibitor of leukotriene B4 formation*. Planta Medica, 1994;60(5):410-413. Doi:10.1055/s-2006-959520
20. Ramadan M et al. *Chamazulene carboxylic acid and matricin: a natural profen and its natural prodrug, identified through similarity to synthetic drug substances*. Journal of Natural products. 2006;69(7):1041-1045. doi:10.1021/np0601556
21. Zaim A et al. *Chemical composition and acididic properties of the Moroccan Tanacetum annuum L. essential oils*. Research Inventy: International Journal of Engineering and Science. 2015;5(5):13-19.
22. Schnaubelt K. *Medical aromatherapy*. Frog, Berkeley, 1999.
23. Schnaubelt K. *The healing intelligence of essential oils – the science of advanced aromatherapy*. Healing Arts Press, Rochester, 2011.
24. Bone K, Mills S. *Principles and Practices of Phytotherapy*. 2nd edn, Churchill Livingstone, Edinburgh, 2013.