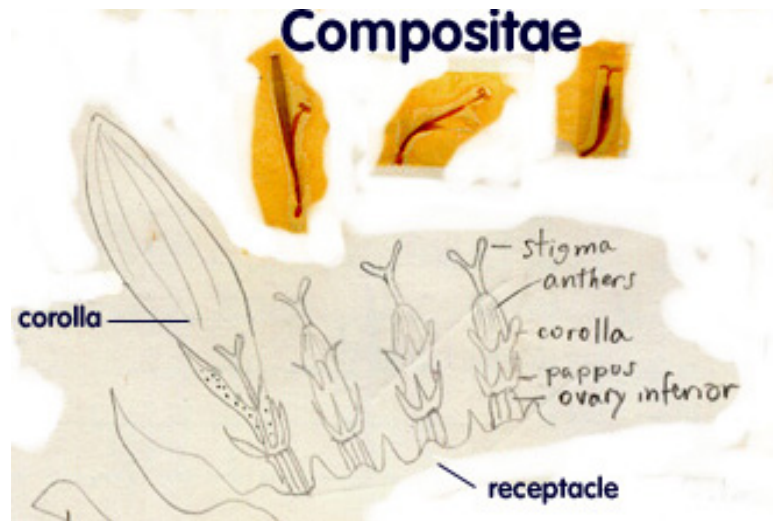


The Benefits of Drinking German Chamomile Tea

Botany

German chamomile, *Matricaria recutita*, is sufficiently different from the also drinkable Roman chamomile that botanists don't classify them under the same genus. (A genus is group of similar species.) Both plants, however, have flowers typical of the Compositae or Asteraceae family, a group of genera that also includes dandelions, sunflowers and lettuce. What looks like a single flower is actually a conglomerate of tiny, identical flowers, giving members of this family the power to produce a greater number and wider variety of seeds. My diagram to the right shows the basic structure of such flowers; note, however, that my actual samples that are trapped beneath yellowed scotch tape, are from another member of the family. German chamomile flowers are about one fifth as big as the ones I preserved.



Matricaria recutita =

Britton, N.L., and A. Brown. 1913. *Illustrated flora of the northern states and Canada*. Vol. 3: 521. Courtesy of Kentucky Native Plant Society. Scanned by Omnitex Inc. Usage Guidelines.

Uses

Traditionally and contemporarily, the essential oil obtained from chamomile flowers has been used to treat inflammations of the skin and mucosa. It is also inhaled to treat nasal catarrh, inflammation and irritation of the respiratory tract. The tea is drunk to treat flatulent nervous dyspepsia, gastritis, diarrhea, travel sickness and mild anxiety.

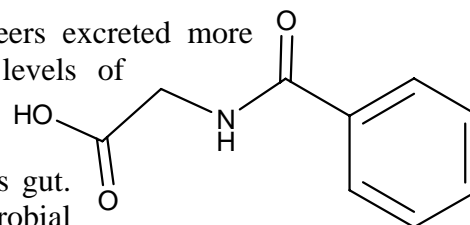
Evidence

In human studies, anti-inflammatory, antiseptic, antispasmodic effects have been attributed to compounds known as flavanoids and sesquiterpenes. One of the sesquiterpenes, chamazulene, has been reported to have antioxidant activity in a 2000 study on rapeseed oil. More recently, in December 2004, the *Journal of Agricultural and Food Chemistry* reported a study on chamomile by Wang, Tang, Nicholson, Hylands and al. The authors used high resolution ^1H NMR spectroscopy and other methods in what is known as a *metabonic strategy*. This technology tries to obtain meaningful results for nutritional interventions, which typically are complicated by many variables such as genetics, gender and environmental factors.

The equivalent of 5 cups of chamomile tea (*Matricaria recutita*) were given to 14 volunteers for a period of two weeks. For a total of six weeks, their urine samples were monitored: two weeks prior to ingestion (to serve as a baseline) and also for two weeks after treatment to examine any potential lingering effects.

The most significant result was that the volunteers excreted more hippurate, glycine and an unknown metabolite. The levels of hippurate also were elevated in the post treatment period. Previous studies had revealed that hippurate levels fluctuate as different microbes battle it out within a rat's gut. Since evidence exists for chamomile flowers' antimicrobial activity, one possible explanation put forward by the authors is that the chamomile killed some bacteria in the intestines.

Two weeks after treatment, different populations of microorganisms had still not reestablished the original equilibrium between themselves. They point out that this is significant since these intestinal bacteria have a serious impact on digestive absorption and on the immune system.

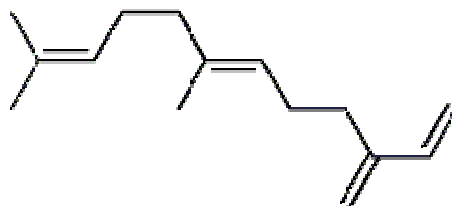


hippurates are esters of this acid, hippuric acid

Chemistry

Chamomile's key ingredients seem to include β -trans-farnesene,

$C_{15}H_{24}$
Exact Mass: 204.1878
Mol. Wt.: 204.35106
m/e: 204.18780 (100.0%), 205.19116 (16.2%), 206.19451 (1.2%)
C, 88.16; H, 11.84

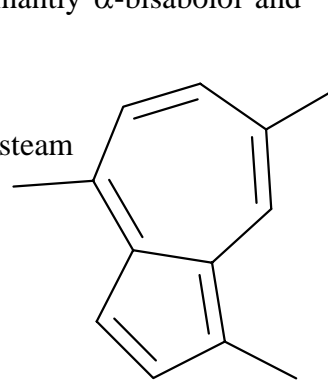


(E)-7,11-dimethyl-3-methylenedodeca-1,6,10-triene(farnesene)

Boiling Point: 544.12 [K]
Melting Point: 202.75 [K]
Gibbs Energy: 385.89 [kJ/mol]
Heat of Form: 103 [kJ/mol]

the flavanoids(apigenin-, luteolin-, and patuletin-7-glycosides), coumarins (umbelliferone and herniarin) and the sesquiterpenoids, predominantly α -bisabolol and chamazulene.

Chamazulene is an artefact formed from matricin during steam distillation and gives the oil a deep blue colour. Also present are polyacetylenes and polysaccharides.



1,4-Dimethyl-7-ethylazulene=chamazulene

References:

- <http://plants.usda.gov>
- Wink and van Wyk. *Medicinal Plants of the World*. Timber Press. 2004
- Wang, Y., Tang, H. A Metabolic Strategy for the Detection of the Metabolic Effects of Chamomile (*Matricaria recutita* L.) Ingestion. *J. Agricultural and Food Chem.* **2004**