

Exploring Knowledge about MOA, Isolation and Multiple Uses of Anethole

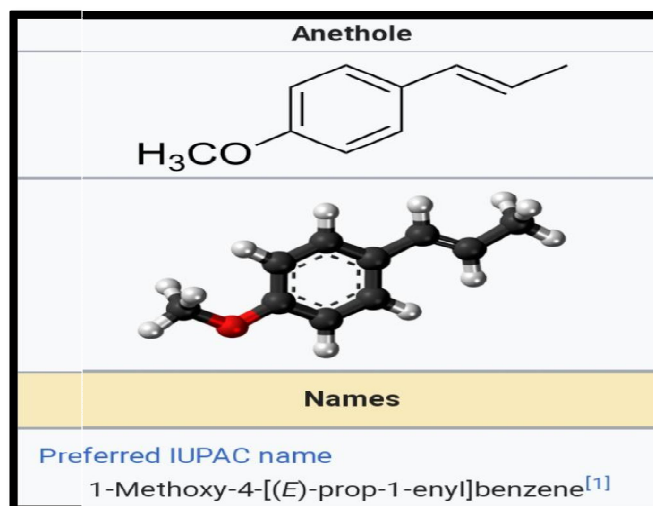
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Abstract: Anethole, a chief constituent of anise, camphor, and fennel, has been shown to block both inflammation and carcinogenesis, but just how these effects are mediated is not known. One possibility is TNF-mediated signaling, which has also been associated with both inflammation and carcinogenesis. In the present report we show that anethole is a potent inhibitor of TNF-induced NF- κ B activation (an early response) as monitored by electrophoretic mobility shift assay, I κ B α phosphorylation and degradation, and NF- κ B.

Keywords: Anethole.

I. INTRODUCTION

Anethole (also known as anise camphor)[2] is an organic compound that is widely used as a flavoring substance. It is a derivative of phenylpropene, a type of aromatic compound that occurs widely in nature, in essential oils. It is in the class of phenylpropanoid organic compounds. It contributes a large component of the odor and flavor of anise and fennel (both in the botanical family Apiaceae), anise myrtle (Myrtaceae), liquorice (Fabaceae), magnolia blossoms, and star anise (Schisandraceae). Closely related to anethole is its isomer estragole, abundant in tarragon (Asteraceae) and basil (Lamiaceae), that has a flavor reminiscent of anise. It is a colorless, fragrant, mildly volatile liquid.[3] Anethole is only slightly soluble in water but exhibits high solubility in ethanol. This trait causes certain anise-flavored liqueurs to become opaque when diluted with water; the ouzo effect. Anethole can mask unpleasant odours & show pleasant taste so it is widely used as a masking agent in commodities, such as toilet soap, gargle, mouthwash, etc. This is the main use of anethole, about 80% of the total. It is used as a flavouring additive and scent in food industry products such as candy, baked goods, chewing tablet



Melting Point	20°C to 23°C
Density	0.991
Boiling Point	232°C to 235°C
Flash Point	96°C (205°F)
Refractive Index	1.56
Quantity	25 g
Beilstein	774229
Sensitivity	Light sensitive
Merck Index	14,643
Solubility Information	Soluble in benzene, ethyl acetate, acetone, carbon disulfide.

Anethole is a monoterpene position isomer and it is the main constituent of essential oils from aromatic plants including anise, star-anise, and fennel

Methods: According to the function of Molecular recognition of supramolecular chemistry, chela shape molecule, trans-1, 2- biphenyl-1, 2-acenaphthendiol was used as host molecule and the volatile oil of Foeniculum vulgare Mill as guest molecule. Trans-1, 2-biphenyl-1, 2-acenaphthendiol can recognize the components that endowed with interactional complementarity and form inclusion compound as crystals.

CAS	4180-23-8
Molecular Formula	C10H12O
Molecular Weight (g/mol)	148.205
MDL Number	MFCD00009284
InChI Key	RUVINXPYWBJD-... Show More
Synonym	anethole, trans-ane... Show More
PubChem CID	637563
ChEBI	CHEBI:35616
IUPAC Name	1-methoxy-4-[(E)-p... Show More
SMILES	CC=CC1=CC=C(C=C1)OC

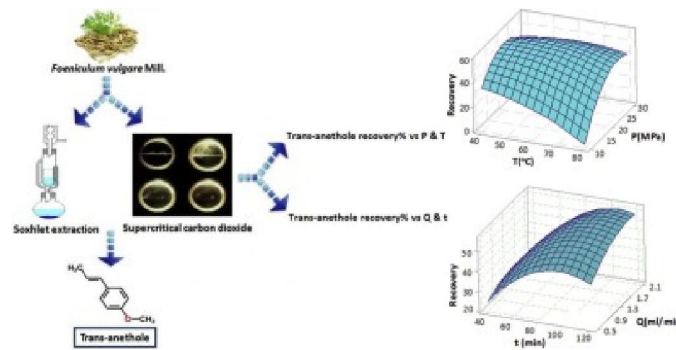
Isolation

Anethole is isolation by liquid-liquid extraction by using ethanol as a solvent and required 80 minutes for extraction from fennel seeds and also isolated by Steam distillation.

MOA

The flavonoid anethole has been shown to suppress inflammation by inhibiting the cellular responses induced by TNF . Anethole has been reported to exert local anesthetic , sedative , oestrogenic, anti-genotoxic and anti-tumor activities with no or little toxic side effect.

Dose : Trans-anethole was administered to Sprague-Dawley rats in the Diet at concentrations of 0, 0.25, 0.5 or 1% for 117 weeks. The



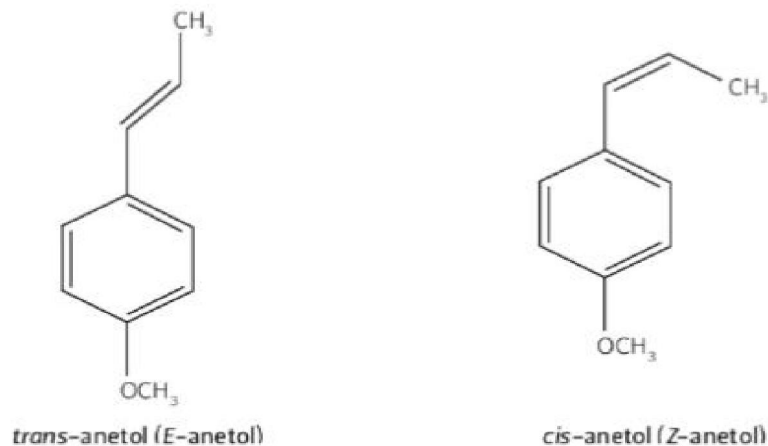
Dose Groups	FCA	FNH	HA	HCA	HCA + HA
Pathologists					
Male Rats					
0% Moch	33/104 (32%)	2/104 (2%)	1/104 (1%)	4/104 (4%)	5/104 (5%)
Truhaut	-	3/104 (3%)	3/104 (3%)	2/104 (2%)	5/104 (5%)
Newberne	48/104 (46%)	2/104 (2%)	1/104 (1%)	3/104 (3%)	4/104 (4%)
0.25% Moch	32/78 (41%)	6/78 (8%)	1/78 (1%)	3/78 (4%)	4/78 (5%)
Truhaut	-	3/78 (4%)	3/78 (4%)	1/78 (1%)	4/78 (5%)
Newberne	34/78 (44%)	7/78 (9%)	1/78 (1%)	3/78 (4%)	4/78 (5%)
0.5% Moch	27/52 (52%)	6/52 (12%)	1/52 (2%)	3/52 (6%)	4/52 (8%)
Truhaut	-	8/52 (15%)	0/52	3/52 (6%)	3/52 (6%)
Newberne	28/52 (52%)	6/52 (12%)	1/52 (2%)	3/52 (6%)	4/52 (8%)
1.0% Moch	25/52 (48%)	14/52 (27%)	3/52 (6%)	1/52 (2%)	4/52 (8%)
Truhaut	-	14/52 (27%)	4/52 (8%)	1/52 (2%)	5/52 (10%)
Newberne	27/52 (52%)	13/52 (25%)	3/52 (6%)	1/52 (2%)	4/52 (8%)
Female Rats					
0% Moch	47/104 (45%)	4/104 (4%)	4/104 (4%)	0/104	4/104 (4%)
Truhaut	-	11/104 (11%)	2/104 (2%)	1/104 (1%)	3/104 (4%)
Newberne	62/104 (60%)	6/104 (6%)	4/104 (4%)	0/104	4/104 (4%)

group Sizes were 52 males and 52 females in two separate control groups and In the intermediate and high dose groups, and 78 males and 78 female In the low dose group. A supplementary group of 26 males and 26 Females received the

trans-anethole at a level of 1% in the diet . The first 54 weeks of the study, then 10 animals of each sex were Placed on the control diet until week 121; the remaining animals of Each sex continued to receive the diet containing 1% trans-anethole. Food intake was recorded daily during weeks 1-32 and for one day every 4 weeks thereafter; body weight gain was monitored at weekly intervals Upto week 26 and then at monthly intervals.

Toxicity

Cis-Anethole is more toxic in nature so, only transform of anethole used in formulation.



Uses

Antibacterial, Antiinflammatory, Antineoplastic, Antifungal, Antipyretic, Antioxidant, Flavouring agent, Deodorant, Exfoliating, Skin Conditioning, Moisturizing, Cleansing, Soothing. Protective, Refreshing, Restoring PH, Brightening.

1) Antioxidant activity : Fennel oil demonstrated antioxidant capacities as evaluated by two lipid model systems: a modified thiobarbituric acid reactive species assay and a spectrophotometric detection of hydroperoxydienes from linoleic acid in a micellar system, comparable to that of the reference antioxidants α -tocopherol and butylated hydroxytoluene



2) Gastroprotective activity : Gastroprotective effects of *F. vulgare* essential Oil and anethole at doses 50 and 100 mg/kg were investigated in ulcerogenesis induced by ethanol (90%, 1 ml) in rats. Fennel oil and anethole exhibited a significant gastroprotective activity against the erosive Damage induced by ethanol.

3) Antinociceptive and anti-inflammatory Activity : In the rabbit conjunctival reflex test, solutions of Trans-anethole administered into the conjunctival Sac increased concentration-dependently the number of stimuli required to evoke the conjunctival reflex ($p < 0.01$); the effect was comparable to that of procaine.

4) Sedative activity :The pentobarbital-induced sleeping time of mice was increased by 93.5% after simultaneous intra-peritoneal administration of essential oil at 50 Mg/kg; trans-anethole gave similar results

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