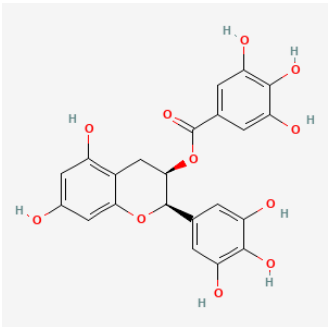
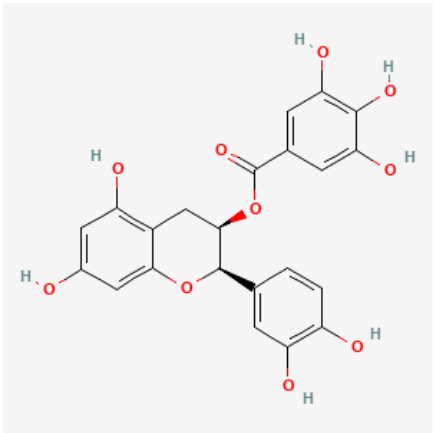
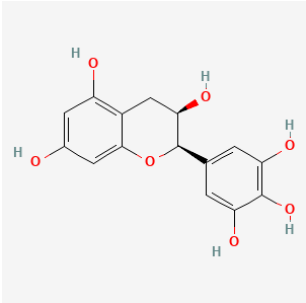
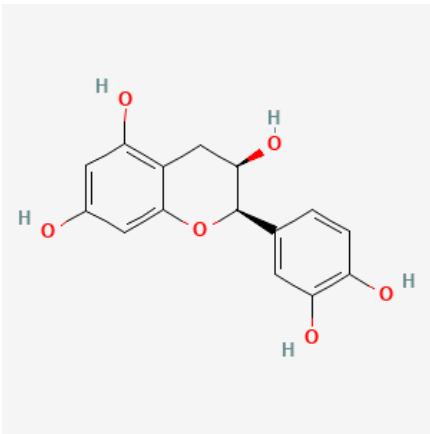
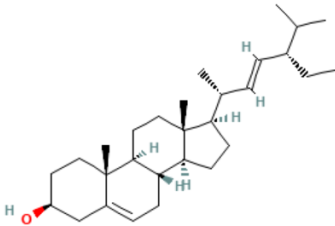
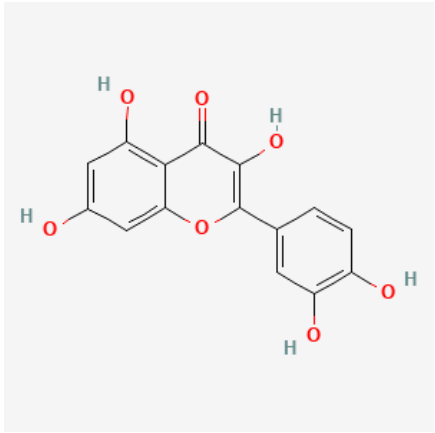
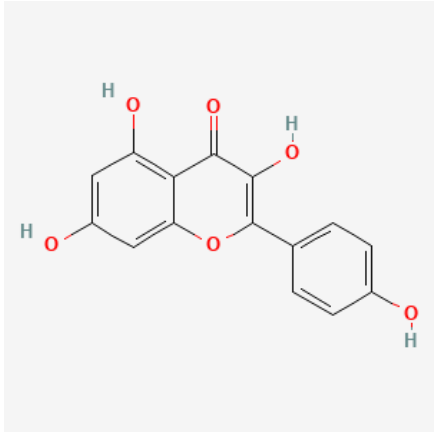
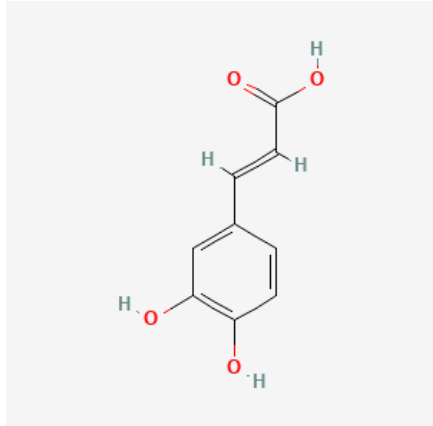
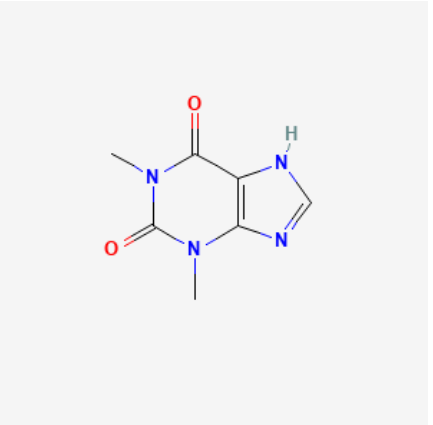
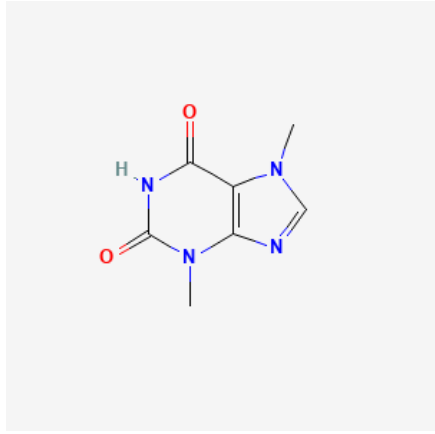
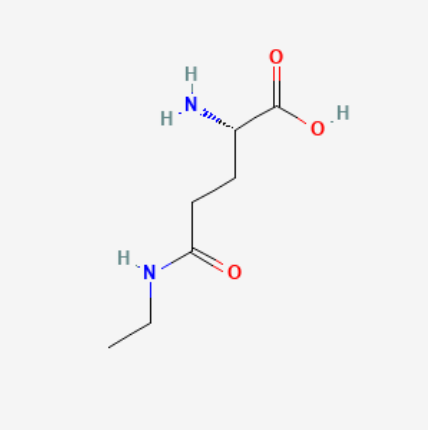


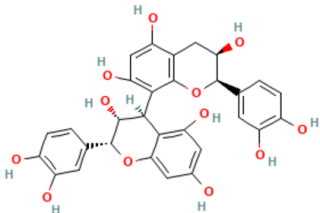
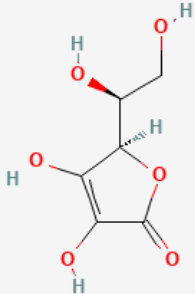
S.NO.	Phytochemical	Structure	Mechanism of action	Reference
1	Epigallocatechin-3-gallate (EGCG)		A powerful antioxidant and anti-cancer agent that inhibits cancer cell proliferation and induces apoptosis	Hu L et al., 2023
2	Epicatechin Gallate (ECG)		Induces apoptosis in cancer cells, and inhibits angiogenesis.	Sánchez-Tena S et al., 2013

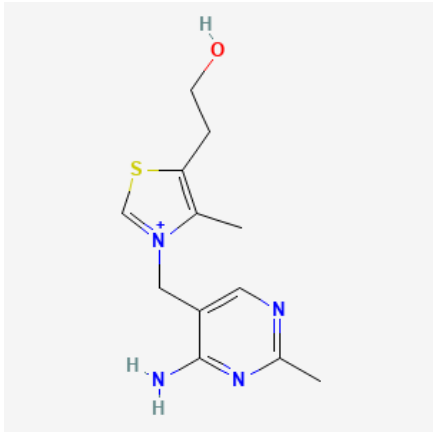
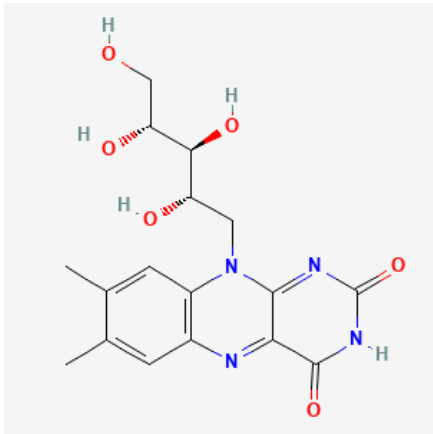
3	Epigallocatechin (EGC)		Antioxidant inhibits cancer cell proliferation.	Vergote D et al., 2002
4	Epicatechin (EC)		EC has an antitumor effect in a murine triple-negative mammary gland tumor model, decreasing tumoral size and volume and increasing survival by 44%	Pérez-Durán J et al., 2023
5	Stigmasterol		Plant metabolite	Duke, 1992

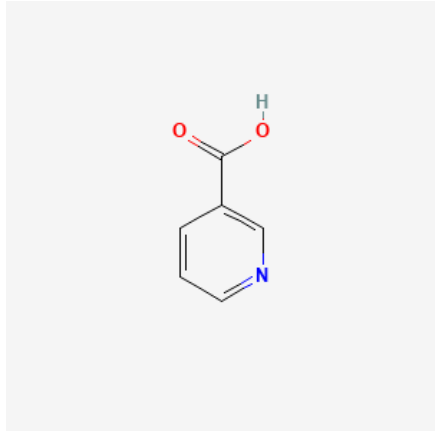
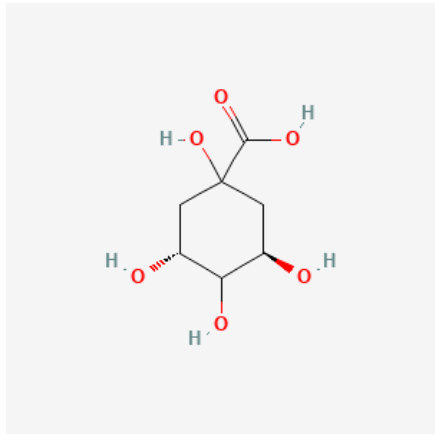
6	Quercetin	 <p>The chemical structure of Quercetin is a flavonoid. It consists of a central chromone ring system. The A-ring (left) has hydroxyl groups at positions 5 and 7. The C-ring (middle) has a carbonyl group at position 4 and a hydroxyl group at position 3. The B-ring (right) is a phenyl ring with hydroxyl groups at positions 3 and 4.</p>	An antioxidant with anti-inflammatory and antihistamine effects.	Murakami A. et al., 2008
7	Kaempferol	 <p>The chemical structure of Kaempferol is a flavonoid. It consists of a central chromone ring system. The A-ring (left) has hydroxyl groups at positions 5 and 7. The C-ring (middle) has a carbonyl group at position 4 and a hydroxyl group at position 3. The B-ring (right) is a phenyl ring with a hydroxyl group at position 4.</p>	Known for its anti-cancer and cardioprotective properties.	Luo H. et al., 2010

8	Caffeic acid	 <p>The chemical structure of Caffeic acid is shown. It consists of a benzene ring with two hydroxyl groups (OH) at the 3 and 4 positions. A propenoic acid side chain is attached to the 1 position of the ring. The side chain consists of a double bond between the ring and a CH group, which is further connected to a CH2 group and a carboxylic acid group (COOH).</p>	Through metabolism by caffeine metabolism genotype. Antioxidant and inhibits tumor proliferation	Gregg JR et al., 2023
9	Theophylline	 <p>The chemical structure of Theophylline is shown. It is a purine derivative, specifically 1,3-dimethylxanthine. It features a fused bicyclic system: a six-membered imidazole ring fused to a four-membered imidazole ring. The nitrogen atoms in the four-membered ring are substituted with methyl groups (CH3). The carbonyl groups (C=O) are located at the 2 and 6 positions of the purine system.</p>	Theophylline down-regulated <i>SRSF3</i> expression and switched <i>p53</i> from alpha into a beta isoform. theophylline induces cellular apoptosis, senescence, and decreased colony formation	Arab L. et al., 2009

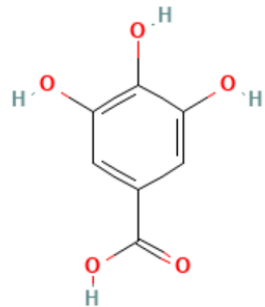
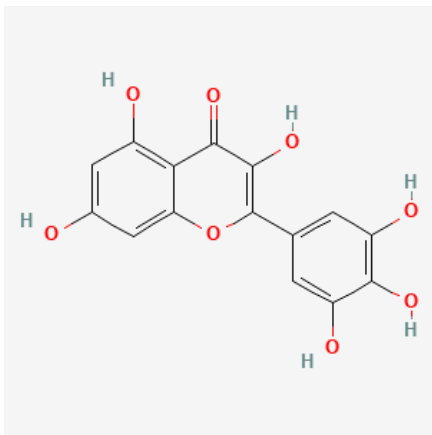
10	Theobromine	 <chem>CN1C=NC2=C1C(=O)N(C)C(=O)N2C</chem>	Reduced the number of cancerous and precancerous lesions, administration also causes more inhibitory effects on the Ki-67 and Akt/mTOR expression than theanine	Shojaei-Zarghani S et al., 2021
11	L-Theanine	 <chem>CCNC(=O)CCC[C@@H](C(=O)O)N1CCCC1</chem>	Act as an anticarcinogen through proapoptotic and antiproliferative effects	Fan X et al., 2021

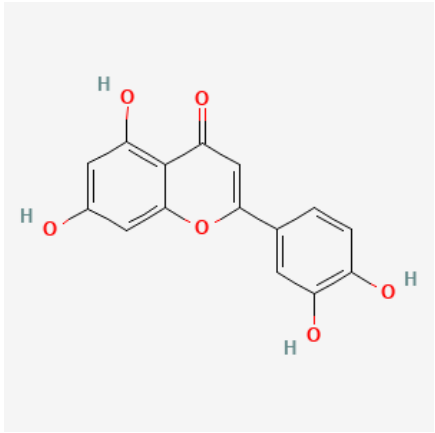
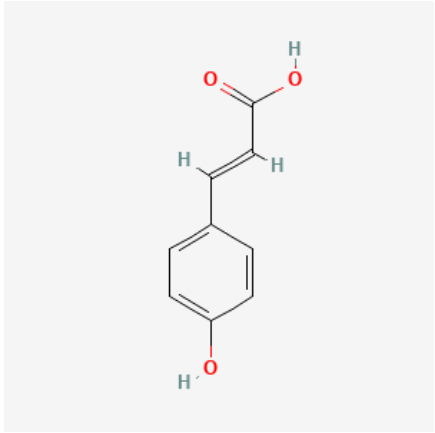
12	Procyanidin B2		It has a role as a metabolite and an antioxidant.	Duke, 1992
13	Vitamin C		Present in green tea but reduced during oxidation. targets many of the mechanisms that cancer cells utilize for their survival and growth	Ngo B et al., 2019

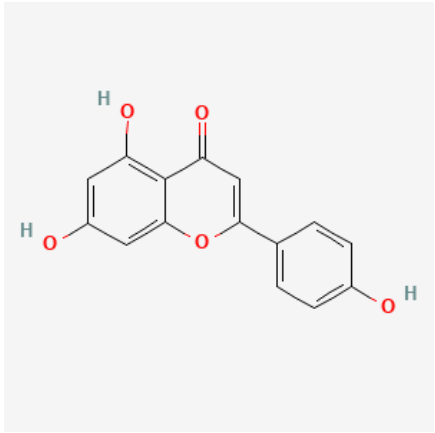
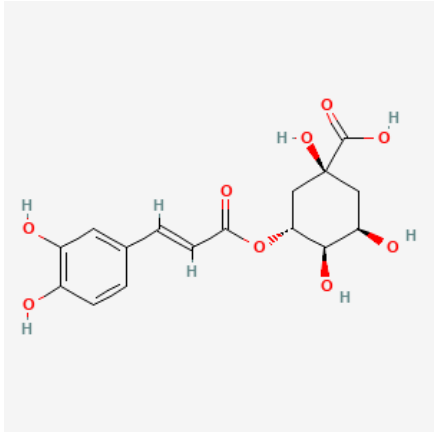
14	B1 (thiamine)		It may exhibit some antitumor effects.	Lu'o'ng KV et al., 2013
15	B2 (riboflavin)		Indirect cancer therapeutic agent that functions in metabolic pathways, oxidative stress modulation, and immune system support	Ben S et al., 2018

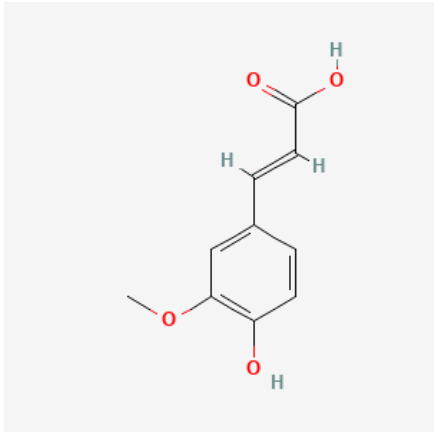
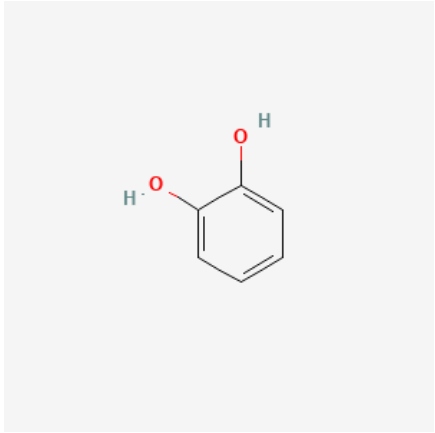
16	B3 (niacin)	 <chem>NC(=O)c1ccncc1</chem>	Improves mitochondrial metabolism and ameliorates cancer- and chemotherapy-induced cachexia.	Beltrà M et al., 2023
17	Quinic Acid	 <chem>OC(=O)C1(O)C(O)C(O)C(O)C1</chem>	Including gallic acid, which has antioxidant and antimicrobial properties.	Ahmad S et al., 2023

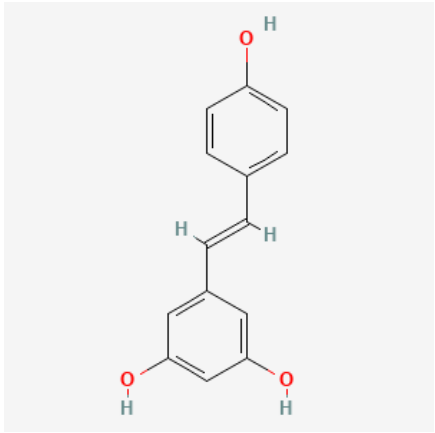
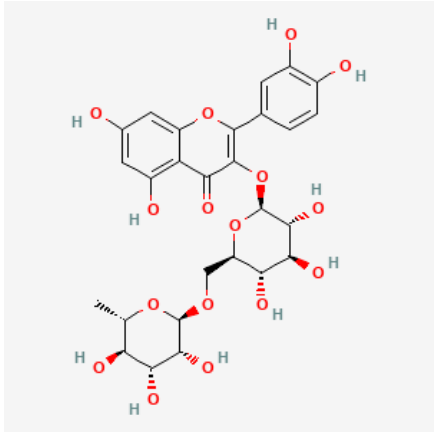


18	Gallic Acid	 <p>The chemical structure of Gallic Acid is shown. It consists of a benzene ring with three hydroxyl groups (-OH) at the 3, 4, and 5 positions and a carboxylic acid group (-COOH) at the 1 position.</p>	Antioxidant properties inhibit tumor cell proliferation	You et al., 2010
19	Myricetin	 <p>The chemical structure of Myricetin is shown. It is a flavonoid consisting of a central chromone core. The A-ring has a hydroxyl group at position 5. The C-ring has a ketone at position 4 and a hydroxyl group at position 3. The B-ring is a 3,4,5-trihydroxyphenyl group attached at position 2.</p>	Induces apoptosis in cancer cells, antioxidant activity	Hyun et al., 2016

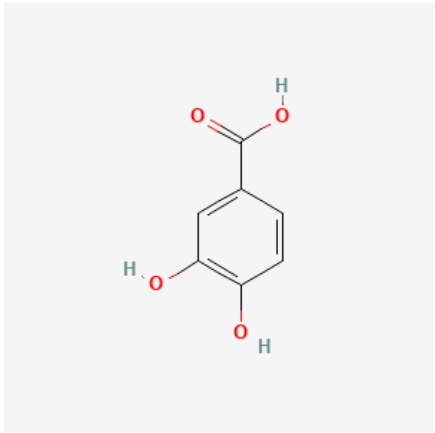
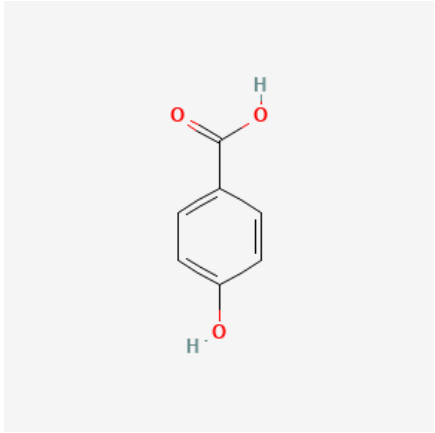
20	Luteolin	 <p>The chemical structure of Luteolin is a flavone. It consists of a central pyrone ring (a six-membered ring with two oxygen atoms, one at the top and one at the bottom, and a double bond between the top carbon and the carbon to its right). This central ring is substituted at the 2-position with a phenyl ring (a benzene ring) that has hydroxyl groups (-OH) at the 3 and 4 positions. The central ring is also substituted at the 7-position with another phenyl ring that has hydroxyl groups at the 3 and 4 positions. The overall structure is symmetrical.</p>	Induces cancer cell apoptosis, inhibits angiogenesis	Wang, W., et al., 2005
21	P-coumaric acid	 <p>The chemical structure of P-coumaric acid is a phenylpropenoic acid. It consists of a central benzene ring (a six-membered ring with three double bonds). This ring is substituted at the 1-position with a propenoic acid side chain (-CH=CH-COOH). The side chain is in the trans configuration, with the carboxylic acid group (-COOH) pointing upwards and the hydrogen atom pointing downwards. The benzene ring has a hydroxyl group (-OH) at the 4-position.</p>	Inhibits cell proliferation and DNA damage	Wang, L. et al., 2022

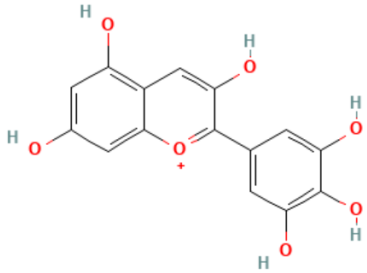
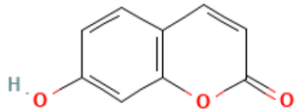
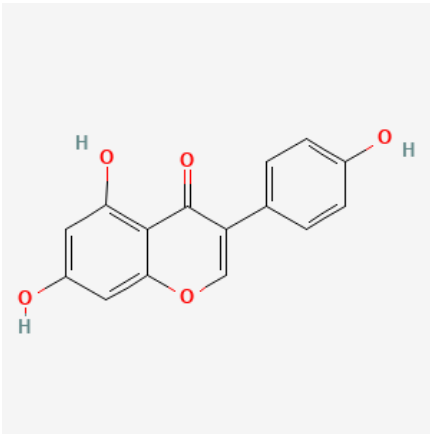
22	Apigenin	 <p>The chemical structure of Apigenin is a flavone. It consists of a central pyrone ring (a six-membered ring with one oxygen and a carbonyl group) fused to a benzene ring on the left and connected via an ether linkage to another benzene ring on the right. The left benzene ring has two hydroxyl groups at the 5 and 7 positions. The right benzene ring has a single hydroxyl group at the 4' position.</p>	Antioxidant properties, suppresses cancer cell growth	Zhao et al., 2017
23	Chlorogenic acid	 <p>The chemical structure of Chlorogenic acid is an ester. It features a 3,4,5-trihydroxybenzoic acid moiety (a benzene ring with hydroxyl groups at positions 3, 4, and 5, and a carboxylic acid group at position 1) esterified with a quinic acid moiety (a cyclohexane ring with hydroxyl groups at positions 1, 2, 3, and 5, and a carboxylic acid group at position 4). The ester linkage is formed between the carboxylic acid group of the benzoic acid moiety and one of the hydroxyl groups of the quinic acid moiety.</p>	Antioxidant, inhibits metastasis	Yan,Y. et al., 2020

24	Ferulic acid		Suppresses oxidative stress and tumor growth	Srinivasan et al., 2007
25	Catechol		Enhances antioxidant defenses, inhibits cancer cell growth	Zhang et al., 2019

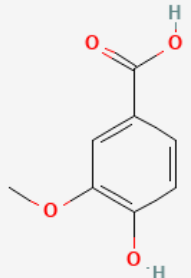
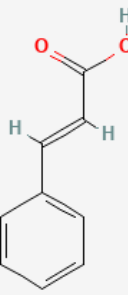
26	Resveratrol	 <p>The chemical structure of Resveratrol is shown. It consists of a stilbenoid core, which is a double bond between two phenyl rings. One phenyl ring is substituted with two hydroxyl groups at the 3 and 5 positions (catechol ring). The other phenyl ring is substituted with a single hydroxyl group at the 4 position (p-hydroxyphenyl ring).</p>	Antioxidant, induces cancer cell apoptosis	Vang et al., 2011
27	Rutin	 <p>The chemical structure of Rutin is shown. It is a flavonoid glycoside. The aglycone part is a flavan-3-ol (quercetin) with a galactose sugar attached to the 3-position of the C-ring. The structure shows multiple hydroxyl groups on the A and C rings, and the galactose sugar is in its cyclic form.</p>	Suppresses cancer cell growth and oxidative damage	Ahmed et al., 2019

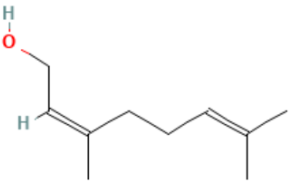
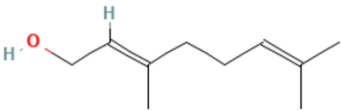
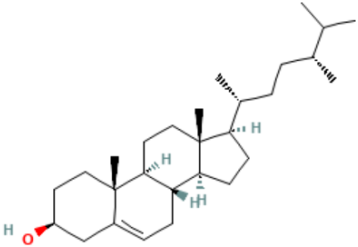
28	Gallocatechin	<p>The chemical structure of Gallocatechin (GC) is shown. It consists of a flavan-3-ol core. The A-ring is a benzene ring with two hydroxyl groups at positions 2 and 6. The C-ring is a five-membered ring with an oxygen atom at position 1 and a hydroxyl group at position 4. The B-ring is a benzene ring with three hydroxyl groups at positions 2, 4, and 6. The B-ring is attached to the C-ring at position 2 via a single bond, and the C-ring is attached to the A-ring at position 2 via a single bond.</p>	Antioxidant activity inhibits cancer cell proliferation	Yang et al., 2019
29	Gallocatechin gallate (GCG)	<p>The chemical structure of Gallocatechin gallate (GCG) is shown. It consists of a flavan-3-ol core, similar to Gallocatechin (GC), but with an additional gallic acid moiety attached to the C-ring at position 4 via an ester bond. The gallic acid moiety is a benzene ring with three hydroxyl groups at positions 2, 4, and 6. The C-ring is attached to the A-ring at position 2 via a single bond, and the B-ring is attached to the C-ring at position 2 via a single bond.</p>	Inhibits cancer cell growth and angiogenesis, antioxidant properties	Yang et al., 2019

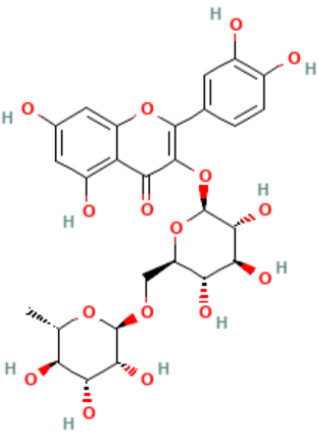
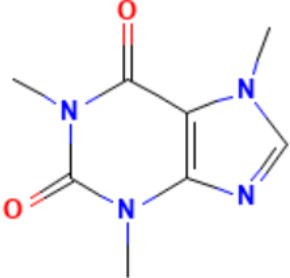
30	3,4-dihydroxybenzoic acid (Protocatechuic acid)		Suppresses tumor growth and acts as an antioxidant.	Lin et al., 2015
31	4-hydroxybenzoic acid		Antioxidant and anti-inflammatory properties and inhibit cancer cell growth.	Lee et al, 2014

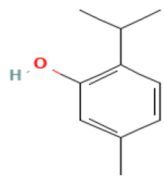
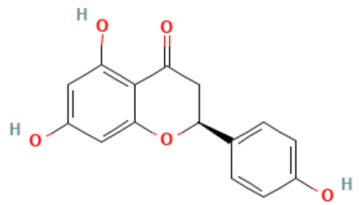
32	Delphinidin		<p>Suppresses cancer cell growth by inducing apoptosis and inhibiting metastasis.</p> <p>It has a role as an antineoplastic agent, a biological pigment, and a plant metabolite.</p>	Thomasset et al., 2014
33	Umbelliferone		<p>It has a role as a fluorescent probe, a plant metabolite, and a food component.</p>	Duke, 1992
34	Genistein (Isoflavones)		<p>Have estrogenic activity and exhibit anticancer properties, particularly in hormone-related cancers</p>	Banerjee et al., 2008

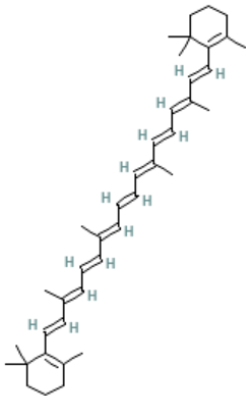
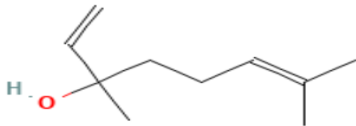
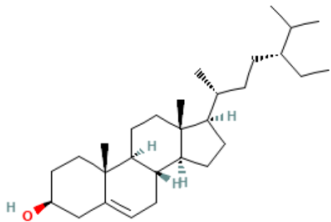


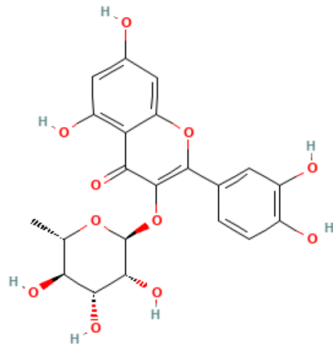
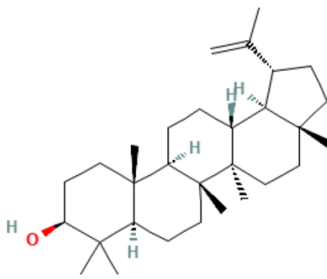
35	Vanillic acid		Antioxidant and anti-inflammatory properties help in inhibiting tumor growth.	Karthikeyan et al., 2016
36	Cinnamic acid		Antitumor activity through inhibition of cancer cell proliferation and induction of apoptosis	Taherian et al., 2019

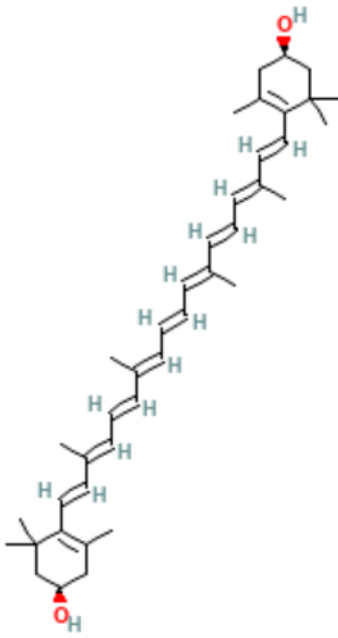
37	Nerol		It has a role as a volatile oil component, a plant metabolite and a fragrance.	Duke,1992
38	Geraniol		It has a role as a fragrance, an allergen, a volatile oil component, and a plant metabolite.	Duke, 1992
39	Campesterol			Duke, 1992

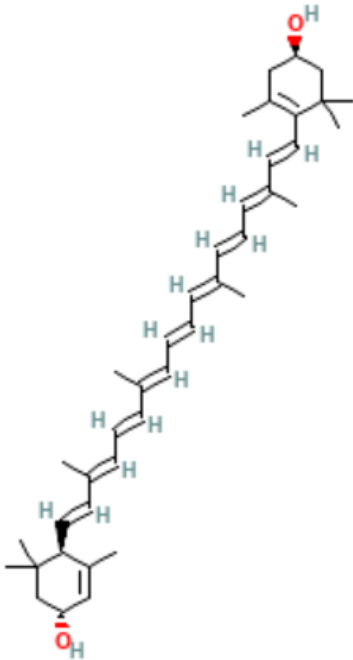
40	Eugenol	 <p>The image shows the chemical structure of Eugenol, which consists of a 3,4-dihydroxybenzyl group attached to a 2-methoxyphenyl ring. The structure is drawn with stereochemistry, showing the spatial arrangement of atoms and bonds.</p>	<p>It has a role as an allergen, a human blood serum metabolite, a sensitizer, a volatile oil component, a flavoring agent, an EC 1.4.3.4 (monoamine oxidase) inhibitor, a radical scavenger, an antibacterial agent, an antineoplastic agent, an apoptosis inducer, an anesthetic, an analgesic, a voltage-gated sodium channel blocker, an NF-kappaB inhibitor, and an anti-inflammatory agent</p>	Duke, 1992
41	Caffeine	 <p>The image shows the chemical structure of Caffeine, which is a purine alkaloid. It features a fused bicyclic system with two nitrogen atoms and two carbonyl groups. The structure is drawn with stereochemistry, showing the spatial arrangement of atoms and bonds.</p>	<p>It has roles as a central nervous system stimulant, a psychotropic drug, a diuretic, a food additive, an adjuvant, a plant metabolite, an environmental contaminant, a xenobiotic, and a human</p>	Duke, 1992

			blood serum metabolite, a mouse metabolite, a geroprotector, and a mutagen.	
42	Thymol		It has been used for its antiseptic, antibacterial, and antifungal actions, and was formerly used as a vermifuge.	Duke, 1992
43	Naringenin		It has a role as an expectorant and a plant metabolite.	Duke, 1992

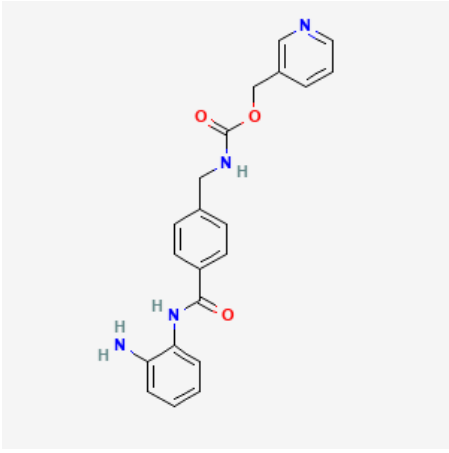
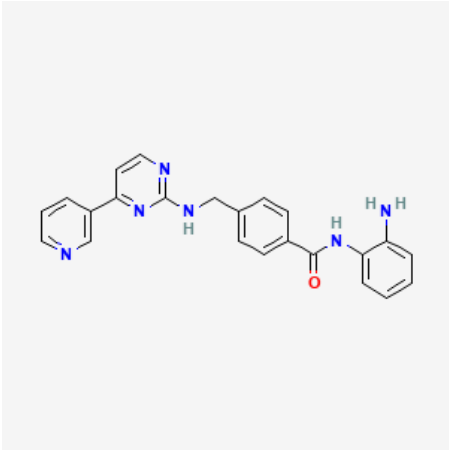
44	Beta-carotene		Antioxidant a plant metabolite	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
45	Linalool		It has a role as a plant metabolite, a volatile oil component, an antimicrobial agent and a fragrance.	Duke, 1992
46	Beta-Sitosterol		It has a role as a sterol methyltransferase inhibitor, an anticholesteremic drug, an antioxidant, and a plant metabolite	Spiller, G. A. 1996

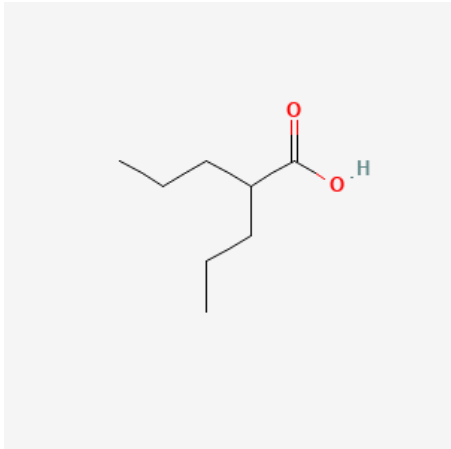
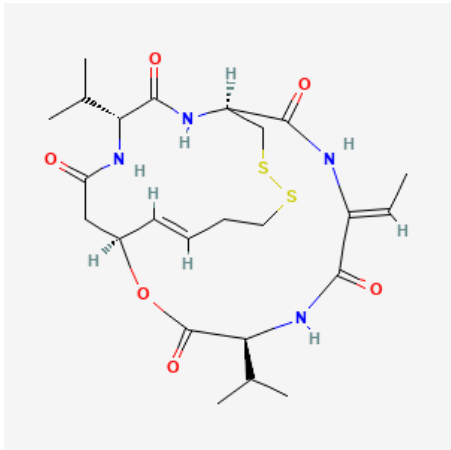
47	Quercitrin		<p>It has a role as an antioxidant, an antileishmanial agent, an EC 1.1.1.184 [carbonyl reductase (<a href="#">NADPH</a>)] inhibitor, an EC 1.1.1.21 (aldehyde reductase) inhibitor, an EC 1.14.18.1 (tyrosinase) inhibitor, and a plant metabolite.</p>	Duke, 1992
48	Lupeol		<p>It has a role as an anti-inflammatory drug and a plant metabolite.</p>	Duke, 1992

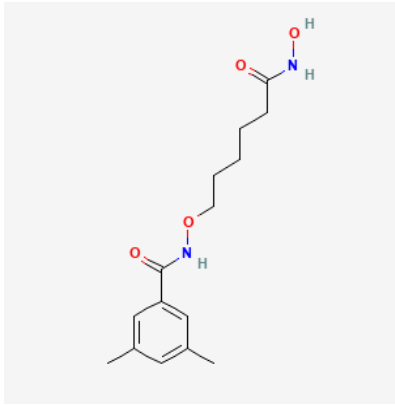
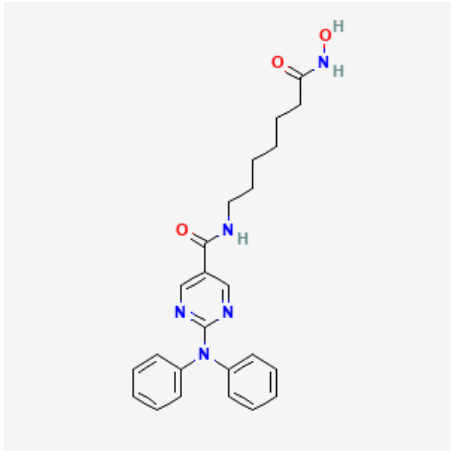
49	Zeaxanthin	 <p>The chemical structure of Zeaxanthin is shown, a tetraterpene carotenoid. It consists of a long, conjugated chain of alternating double and single bonds, with methyl groups at the ends of the chain. The structure is drawn in a zig-zag conformation. The terminal rings are substituted with hydroxyl groups (OH) in red.</p>	It has a role as a bacterial metabolite, a cofactor, and an antioxidant.	Duke, 1992
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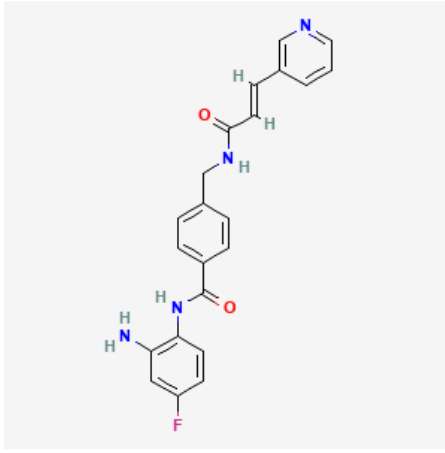
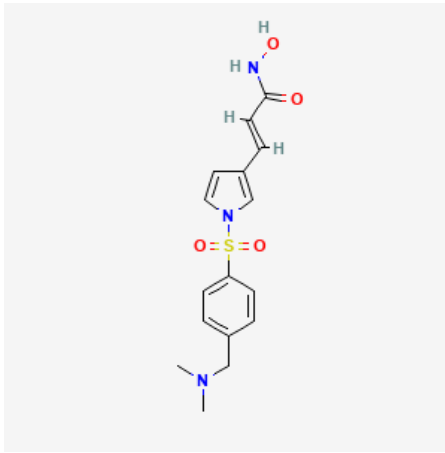
50	Lutein	 <p>The chemical structure of Lutein is shown, featuring a long conjugated polyene chain with 11 double bonds. Each end of the chain is capped with a substituted cyclohexene ring. The rings are substituted with methyl groups and a hydroxyl group (OH), which is highlighted in red. The stereochemistry at the ring junctions is indicated with wedges and dashes.</p>	Plant metabolite	Duke, 1992
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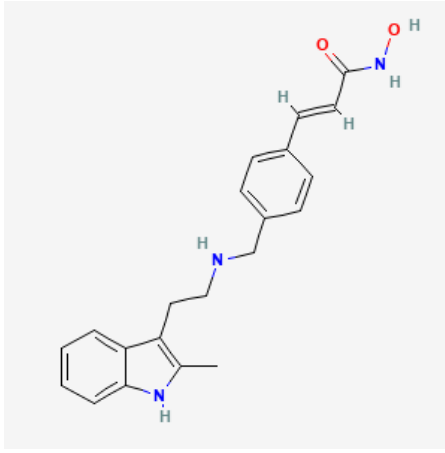
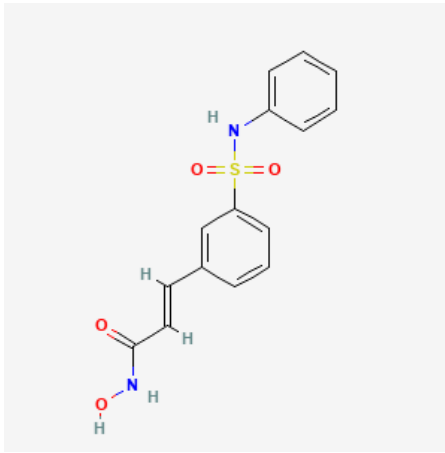


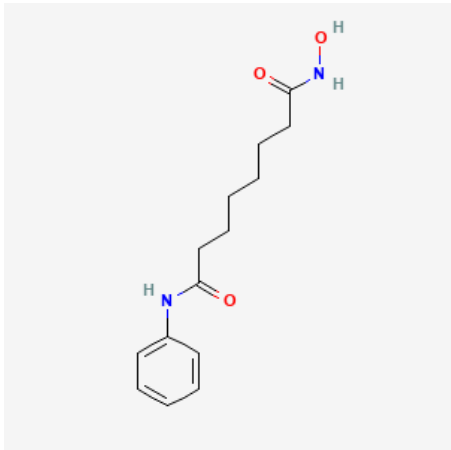
51	Entinostat	 <p>The chemical structure of Entinostat is shown. It features a 2-aminophenyl group connected via an amide bond to a para-substituted benzene ring. This benzene ring is further connected via a methylene group to a secondary amide, which is linked to a 4-pyridylmethoxy group.</p>	Induces BRCA-like synthetic lethality in HR-proficient ovarian cancer with olaparib	Guptan et al., 2021
52	Mocetinostat	 <p>The chemical structure of Mocetinostat is shown. It consists of a 4-pyridylmethyl group connected via a methylene group to a secondary amide. This amide is linked to a para-substituted benzene ring, which is further connected via a methylene group to a 2-aminophenyl group.</p>	Reactivates tumor suppressor genes, potentially restoring normal cell function and inhibiting tumor growth.	Kell, J., 2007

53	Valproic acid		Promotes histone hyperacetylation, reactivates tumor suppressor genes, and boosts sensitivity to treatments like olaparib.	Shan et al., 2012
54	Romidepsin		Inhibits HDAC enzymes, restoring gene expression, and triggering cancer cell arrest and apoptosis.	Bertino et al., 2011

55	N-((6-(hydroxylamino)-6-oxohexyl)oxy)-3,5-dimethylbenzamide		Resensitizes cisplatin-resistant cancer cells.	Marek et al., 2013
56	Ricolinostat		May help prevent or reverse chemotherapy-induced neuropathy, improving paclitaxel dosing in ovarian cancer.	Ali et al., 2020

57	Tucidinostat	 <p>The chemical structure of Tucidinostat is a hydroxamic acid derivative. It features a central benzene ring with a hydroxamic acid group (-NHOH) at the top position and a 4-(2-fluorophenyl)amino group at the bottom position. The hydroxamic acid group is shown in a tautomeric form with a double bond between the nitrogen and the oxygen, and a single bond between the nitrogen and the carbon of the hydroxyl group.</p>	It may boost PD-1 blockade in immunotherapy.	Mao et al., 2024
58	Resminostat	 <p>The chemical structure of Resminostat is a hydroxamic acid derivative. It features a central benzene ring with a hydroxamic acid group (-NHOH) at the top position and a 4-(dimethylamino) group at the bottom position. The hydroxamic acid group is shown in a tautomeric form with a double bond between the nitrogen and the oxygen, and a single bond between the nitrogen and the carbon of the hydroxyl group.</p>	Hydroxamic acid-based HDAC inhibitors	Ellerhoff et al., 2016

59	Panobinostat	 <p>The chemical structure of Panobinostat features a 3-methyl-1H-indole-2-ylmethyl group connected via a 3-aminopropyl linker to a 4-((E)-2-oxo-2-(hydroxyamino)vinyl)phenyl group. The indole ring has a methyl group at the 3-position and a hydrogen atom on the nitrogen. The vinyl group is in the E configuration, and the hydroxyl group on the terminal nitrogen is shown in red.</p>	<p>Inhibits DAC/HDAC proteins, altering gene expression and protein metabolism, with antitumor effects in multiple myeloma</p>	Laubach et al., 2015
60	Belinostat	 <p>The chemical structure of Belinostat consists of a 4-((E)-2-oxo-2-(hydroxyamino)vinyl)phenyl group linked at the para position to a benzene ring. This second benzene ring is substituted at the para position with a benzylsulfonamide group, where the sulfonamide group is shown with two red oxygen atoms and a hydrogen atom on the nitrogen.</p>	<p>Prevents acetyl group removal from histones and proteins.</p>	Valiuliene et al., 2015

61	Vorinostat		Induces DNA double-strand breaks in cancer cells, leading to cell death while normal cells can repair the damage.	Lee et al., 2010
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