

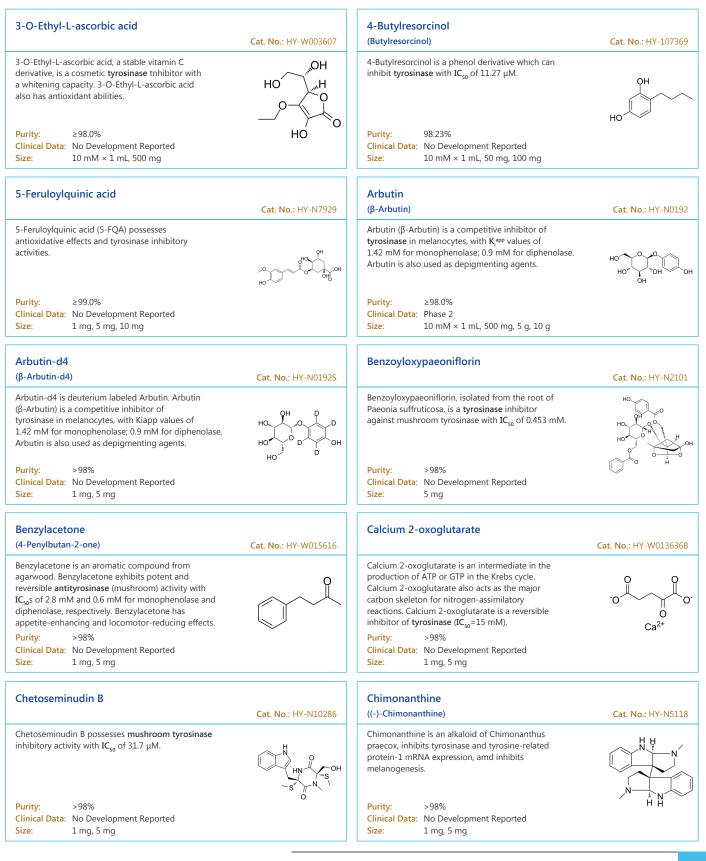
## Tyrosinase

Tyrosinase is a copper-containing metalloprotein belonging to the type-3 copper protein family, together with haemocyanins and catechol oxidases. Tyrosinases are the catalysts in mammals responsible for the formation of melanin in skin and hair color, as well as browning in fruit and vegetables following cell damage.

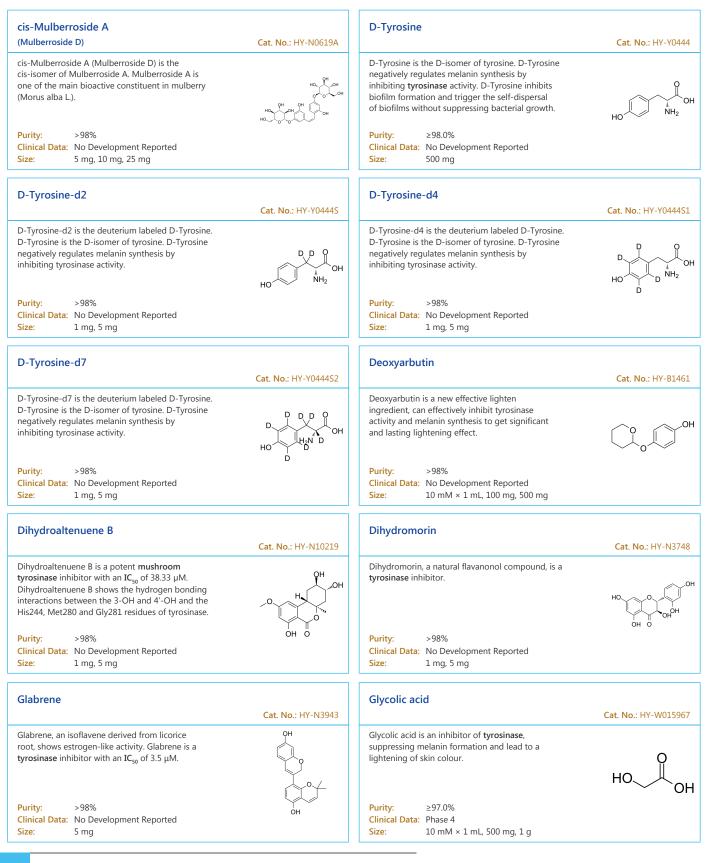
Tyrosinases are found in various prokaryotes as well as in plants, fungi, arthropods, and mammals and are responsible for pigmentation, wound healing, radiation protection, and primary immune response. Tyrosinases perform two sequential enzymatic reactions: hydroxylation of monophenols and oxidation of diphenols to form quinones which polymerize spontaneously to melanin. In plants, sponges, and many invertebrates, tyrosinases are important for wound healing and primary immune responses; in arthropods, they play a role in sclerotization, and in bacteria, tyrosinases protect DNA from UV damage.

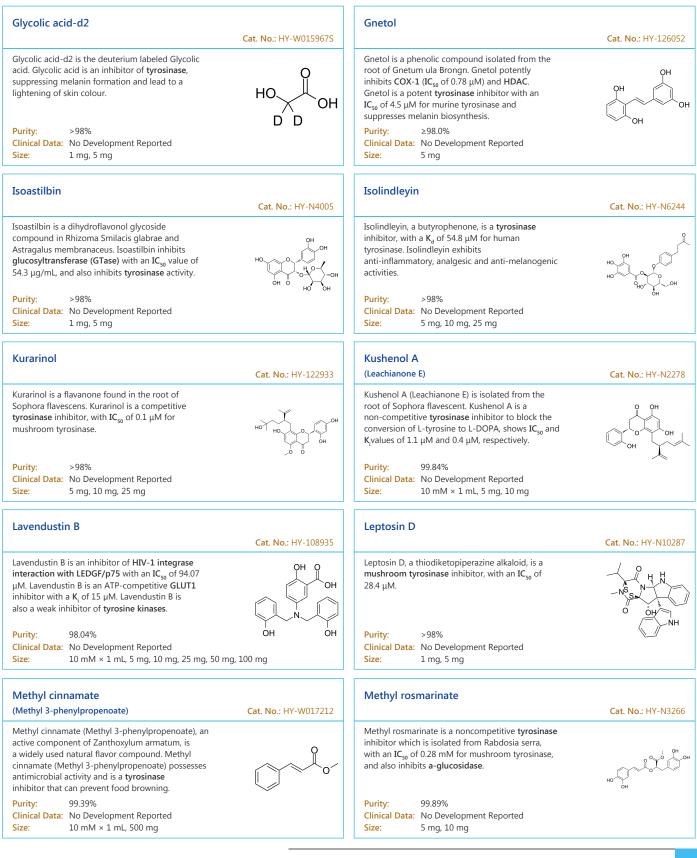
## Tyrosinase Inhibitors & Modulators

(-)-Taxifolin		(R)-Trolox	
((-)-Dihydroquercetin)	Cat. No.: HY-N0136B		Cat. No.: HY-101445A
(-)-Taxifolin is the less active enantiomer of Taxifolin. Taxifolin exhibits important anti- <b>tyrosinase</b> activity. Taxifolin exhibits significant inhibitory activity against <b>collagenase</b> with an $IC_{50}$ value of 193.3 $\mu$ M. <b>Purity:</b> >98% <b>Clinical Data:</b> No Development Reported <b>Size:</b> 5 mg, 10 mg	он о но он он он он	<ul> <li>(R)-Trolox is a vitamin E analogue and a competitive tyrosinase inhibitor with a K<sub>1</sub> value of 0.83 mM and a ID<sub>50</sub> value of 1.88 mM. The</li> <li>(R)-Trolox has stronger tyrosinase affinity than the (S) enantiomer (K<sub>1</sub> value of 0.61 mM).</li> <li>Purity: 99.94%</li> <li>Clinical Data: No Development Reported</li> <li>Size: 10 mM × 1 mL, 50 mg, 100 mg</li> </ul>	но
5		5.20. 20 million 2 million 19, 200 mg	
(±)-Taxifolin ((±)-Dihydroquercetin)	<b>Cat. No.</b> : HY-N0136A	2-Hydroxy-4-methoxybenzaldehyde	<b>Cat. No.</b> : HY-N0445
(±)-Taxifolin ((±)-Dihydroquercetin) is the racemate of Taxifolin. Taxifolin exhibits important anti- <b>tyrosinase</b> activity. Taxifolin exhibits significant inhibitory activity against <b>collagenase</b> with an <b>IC</b> <sub>50</sub> value of 193.3 μM.	HO OH OH OH OH	2-Hydroxy-4-methoxybenzaldehyde, a chemical compound and an isomer of Vanillin, could be used to synthesis Urolithin M7.	0 HO O
Purity:>98%Clinical Data:No Development ReportedSize:10 mg	Relative stereochemistry	Purity:99.90%Clinical Data:No Development ReportedSize:100 mg	
2. Kotoplutaric acid		2 Kataglutaria asid Sadium	
2-Ketoglutaric acid (Alpha-Ketoglutaric acid)	Cat. No.: HY-W013636	2-Ketoglutaric acid Sodium (Alpha-Ketoglutaric acid Sodium)	<b>Cat. No.:</b> HY-W013636A
2-Ketoglutaric acid (Alpha-Ketoglutaric acid) is an intermediate in the production of ATP or GTP in the Krebs cycle. 2-Ketoglutaric acid also acts as the major carbon skeleton for nitrogen-assimilatory reactions. Purity: ≥95.0% Clinical Data: No Development Reported Size: 500 mg, 1 g	но со он	2-Ketoglutaric acid Sodium (Alpha-Ketoglutaric acid Sodium) is an intermediate in the production of ATP or GTP in the Krebs cycle. 2-Ketoglutaric acid Sodium also acts as the major carbon skeleton for nitrogen-assimilatory reactions. Purity: >98% Clinical Data: No Development Reported Size: 1 mg, 5 mg	HO HO ONA
2-Methoxycinnamic acid	<b>Cat. No.:</b> HY-N1386	3',4'-Dihydroxyacetophenone (3,4-DHAP)	<b>Cat. No.:</b> HY-N1775
2-Methoxycinnamic acid is a noncompetitive inhibitor of <b>tyrosinase</b> . Purity: ≥98.0% Clinical Data: No Development Reported Size: 10 mM × 1 mL, 10 mg, 50 mg, 100 mg	ОН	3',4'-Dihydroxyacetophenone (3,4-DHAP), isolated from Picea Schrenkiana Needles exhibits a strong suppressive action against tyrosinase activity, with an IC <sub>so</sub> of 10 μM. 3',4'-Dihydroxyacetophenone (3,4-DHAP) is a vasoactive agent and antioxidant.         Purity:       99.83%         Clinical Data:       No Development Reported         Size:       500 mg	HO HO
3,4-Dimethoxyphenol	<b>Cat. No.:</b> HY-N1780	3-(2,4-Dihydroxyphenyl)propanoic acid	<b>Cat. No.:</b> HY-N1750
3,4-Dimethoxyphenol is a plant-derived phenylpropanoid compound and can use as a whitening agent in cosmetics. 3,4-Dimethoxyphenol has <b>tyrosinase</b> -inhibiting activity. 3,4-Dimethoxyphenol has potent antioxidant effect isolated from the bacterial fermentation broth. <b>Purity:</b> 99.97%	ОСОН	3-(2,4-Dihydroxyphenyl)propanoic acid (DPPacid) is a potent and competitive <b>tyrosinase</b> inhibitor, inhibits L-Tyrosine and DL-DOPA with an <b>IC</b> <sub>50</sub> and a <b>K</b> <sub>1</sub> of 3.02 μM and 11.5 μM, respectively.	но он
Clinical Data:       No Development Reported         Size:       10 mM × 1 mL, 100 mg		Clinical Data: No Development Reported Size: 25 mg, 100 mg	



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Mirificin		MtTMPK-IN-4	
(Puerarin apioside)	Cat. No.: HY-N2134		Cat. No.: HY-143452
Mirificin (Puerarin apioside) is a isoflavone in Puerariae Lobatae Radix. Mirificin inhibits <b>tyrosinase (TYR)</b> with an <b>IC</b> <sub>so</sub> of 12.66 μM.		MtTMPK-IN-4 (compound 2), a para-piperidine, is a potent <b>mycobacterium tuberculosis thymidylate kinase (MtTMPK)</b> inhibitor with an IC <sub>50</sub> of 6.1 $\mu$ M. MtTMPK-IN-4 is a potent <b>tyrosinase</b> inhibitor. MtTMPK-IN-4 is a potent antibacterial agent.	
Purity:>98%Clinical Data:No Development ReportedSize:5 mg, 10 mg	U CON	Purity:>98%Clinical Data:No Development ReportedSize:1 mg, 5 mg	
Mulberroside A	<b>Cat. No.:</b> HY-N0619	Mulberroside F	<b>Cat. No.</b> : HY-N3518
Mulberroside A is one of the main bioactive constituent in mulberry (Morus alba L.).		Mulberroside F is one of the main bioactive constituents in mulberry (Morus alba L.). Mulberroside F shows inhibitory effects on <b>tyrosinase</b> activity and on the melanin formation.	
Purity:99.75%Clinical Data:No Development ReportedSize:10 mM × 1 mL, 5 mg, 10 mg, 50 mg		Purity:>98%Clinical Data:No Development ReportedSize:1 mg, 5 mg	
Oxyresveratrol (trans-Oxyresveratrol)	<b>Cat. No.:</b> HY-N1430	Oxyresveratrol 2-O-β-D-glucopyranoside	<b>Cat. No.</b> : HY-N3516
Oxyresveratrol (trans-Oxyresveratrol) is a potent naturally occurring antioxidant and free radical scavenger ( $IC_{50}$ of 28.9 $\mu$ M against DPPH free radicals).	он	Oxyresveratrol 2-O- $\beta$ -D-glucopyranoside is a phenolic compound isolated from Morus nigra root and is an effective <b>tyrosinase</b> inhibitor with an IC <sub>50</sub> of 29.75 $\mu$ M.	
Purity:98.87%Clinical Data:No Development ReportedSize:10 mM × 1 mL, 100 mg, 500 mg, 1 g	но чин	Purity:     ≥99.0%       Clinical Data:     No Development Reported       Size:     5 mg	но
Oxyresveratrol 3'-O-β-D-glucopyranoside	<b>Cat. No.:</b> HY-N3517	Paltimatrectinib	<b>Cat. No.:</b> HY-145587
Oxyresveratrol 3'-O-β-D-glucopyranoside is a phenolic compound isolated from Morus nigra root and is an effective <b>tyrosinase</b> inhibitor with an $IC_{50}$ of 1.64 μM.		Paltimatrectinib (compound I-147) is a potent tyrosine kinase inhibitor with an $IC_{so}$ of <10 nM for tropomyosin kinases A (TrkA). Paltimatrectinib has the potential for cancer and inflammatory diseases.	
Purity:>98%Clinical Data:No Development ReportedSize:5 mg, 10 mg, 25 mg		Purity:>98%Clinical Data:No Development ReportedSize:1 mg, 5 mg	∕_∕~F F
Pedalitin	<b>Cat. No.:</b> HY-N3101	Phaeosphaone D	<b>Cat. No.</b> : HY-N10285
Pedalitin is a inhibitor of tyrosinaseIC $_{s0}$ =0.28 mM and $\alpha$ -glucosidaseIC $_{s0}$ =0.29 mM.		Phaeosphaone D is a thiodiketopiperazine alkaloid compound isolated from Phaeosphaeria fuckelii, an endophytic fungus. Phaeosphaone D displays mushroom tyrosinase inhibitory activity with an $IC_{50}$ value of 33.2 $\mu$ M.	
Purity:     >98%       Clinical Data:     No Development Reported       Size:     5 mg		Purity:     >98%       Clinical Data:     No Development Reported       Size:     1 mg, 5 mg	, N° ×S

Polyphyllin C	Cat. No.: HY-W019829	SU-4942	Cat. No.: HY-21290
Polyphyllin C (compound 2) is a spirostanol saponin. Polyphyllin C exhibits mild $(IC_{50}=36.87\mu M)$ activities against the tyrosinase and moderate ( $IC_{50}=1.59 \mu g/mL$ ) antileishmanial activities.         Purity:       >98%         Clinical Data:       No Development Reported         Size:       5 mg, 10 mg, 25 mg		SU-4942 is a tyrosine kinase signal signal modulator. SU-4942 inhibits VEGF- and endothelial cell growth factor (ECGF)-induced mitogenesis in endothelial cells (US5792783A).         Purity:       >98%         Clinical Data:       No Development Reported         Size:       5 mg, 10 mg, 25 mg, 50 mg	
Swertiajaponin	<b>Cat. No.:</b> HY-N2204	Taxifolin ((+)-Dihydroquercetin; (+)-Taxifolin)	<b>Cat. No.:</b> HY-N0136
Swertiajaponin is a tyrosinase inhibitor, forms multiple hydrogen bonds and hydrophobic interactions with the binding pocket of tyrosinase, with an IC <sub>50</sub> of 43.47 μM. Purity: >98% Clinical Data: No Development Reported	HO OH OH OH OH OH	Taxifolin ((+)-Dihydroquercetin) exhibitsimportant anti-tyrosinase activity. Taxifolinexhibits significant inhibitory activity againstcollagenase with an $IC_{50}$ value of 193.3 $\mu$ M.Taxifolin is an important natural compound withantifibrotic activity.Purity:99.97%Clinical Data:No Development Reported	HO O OH OH
Size: 1 mg, 5 mg		Size: 10 mM × 1 mL, 50 mg, 100 mg	
Taxifolin-d3		TNK2-IN-1	
((+)-Dihydroquercetin-d3; (+)-Taxifolin-d3)	Cat. No.: HY-N0136S		Cat. No.: HY-145111
Taxifolin-d3 is deuterium labeled Taxifolin.Taxifolin ((+)-Dihydroquercetin) exhibitsimportant anti-tyrosinase activity. Taxifolinexhibits significant inhibitory activity againstcollagenase with an IC50 value of 193.3 μM.Purity:>98%Clinical Data:No Development ReportedSize:1 mg, 5 mg		TNK2-IN-1 is a TNK2 inhibitor. TNK2-IN-1 has an IC <sub>50</sub> of 224 nM for TNK2. TNK2-IN-1 can be used for the research of cancer.         Purity:       >98%         Clinical Data:       No Development Reported         Size:       1 mg, 5 mg	N N N N N N N N N N N N N N N N N N N
Trifolirhizin	<b>Cat. No.</b> : HY-N0616	Tropolone	<b>Cat. No.:</b> HY-N7135
Trifolirhizin is a pterocarpan flavonoid isolated from the roots of Sophora flavescens. Trifolirhizin possesses potent <b>tyrosinase</b> inhibitory activity with an $IC_{50}$ of 506 $\mu$ M. Trifolirhizin exhibits potential anti-inflammatory and anticancer activities.	O O O O O O O O O O O O O O O O O O O	Tropolone, a tropone derivative with a hydroxyl group in the 2-position, is a precursor of manyazulene derivatives such as methyl 2-methylazulene-1-carboxylate.	ОН
Purity:99.91%Clinical Data:No Development ReportedSize:5 mg, 10 mg, 20 mg		Purity:99.68%Clinical Data:No Development ReportedSize:10 mM × 1 mL, 250 mg	~ 0
Validamycin A	<b>Cat. No.:</b> HY-B0856	Viscumneoside III	<b>Cat. No.:</b> HY-N8223
Validamycin A, a fungicidal, is an agricultural antibiotic. Validamycin A is originally isolated from Streptomyces hygroscopicus var. limoneus. Validamycin A inhibits the growth of A. flavus, with a <b>MIC</b> of 1µg/mL.		Viscumneoside III, a dihydroflavone O-glycoside, is a potent <b>tyrosinase</b> inhibitor with an IC <sub>so</sub> of 0.5 mM. Viscumneoside III has anti-angina pectoris.	
Purity:       ≥ 60.0%         Clinical Data:       No Development Reported         Size:       10 mM × 1 mL, 100 mg	ОН	Purity:>98%Clinical Data:No Development ReportedSize:5 mg, 10 mg, 25 mg	

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XMD16-5		XMD8-87	
	Cat. No.: HY-101243	(ACK1-B19)	Cat. No.: HY-15811
XMD16-5 is a potent TNK2 inhibitor with $IC_{so}$ values of 16 and 77 nM for the D163E and R806Q mutations, respectively.	S-NH N S-O-NO-OH	XMD8-87 is a potent <b>TNK2</b> inhibitor with $IC_{so}$ values of 38 and 113 nM for the D163E and R806Q mutations, respectively.	
Purity:98.73%Clinical Data:No Development ReportedSize:10 mM × 1 mL, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg		Purity:98.63%Clinical Data:No Development ReportedSize:10 mM × 1 mL, 5 mg, 10 mg, 25 mg, 50 mg, 100 mg	
ZAP-180013		α-Arbutin	
	Cat. No.: HY-136179	(4-Hydroxyphenyl α-D-glucopyranoside)	Cat. No.: HY-N3002
ZAP-180013 is a zeta-chain-associated protein kinase 70 (ZAP-70) inhibitor with an IC <sub>50</sub> of 1.8 $\mu$ M. ZAP-180013 inhibits the interaction of ZAP-70 SH2 domain with immunoreceptor tyrosine-based activation motif (ITAMs).		$\alpha$ -Arbutin (4-Hydroxyphenyl $\alpha$ -D-glucopyranoside) is emerging as popular and effective skin whiteners, acting as <b>tyrosinase</b> inhibitor.	
Purity:98.56%Clinical Data:No Development ReportedSize:10 mM × 1 mL, 5 mg, 10 mg	-	Purity:99.70%Clinical Data:No Development ReportedSize:10 mM × 1 mL, 50 mg, 100 mg	
β-Tocopherol		β-Tocopherol-d3	
	Cat. No.: HY-133680		Cat. No.: HY-113068S
<ul> <li>β-Tocopherol is an analogue of vitamin E, exhibits antioxidant properties.</li> <li>β-Tocopherol can inhibit tyrosinase activity and melanin synthesis.</li> <li>β-Tocopherol also can prevent the inhibition of cell growth and of PKC activity caused by d-alpha-tocopherol.</li> </ul>	Later to the second	β-Tocopherol-d3 is the deuterium labeled β-Tocopherol. β-Tocopherol is an analogue of vitamin E, exhibits antioxidant properties. β-Tocopherol can inhibit <b>tyrosinase</b> activity and melanin synthesis.	
Purity:99.64%Clinical Data:No Development ReportedSize:5 mg, 10 mg		Purity:>98%Clinical Data:No Development ReportedSize:2.5 mg, 25 mg	