Electronic Supplementary Material (ESI) for Food & Function. This journal is © The Royal Society of Chemistry 2021

Supplemental material

Suppl. Table S1: Chemical structures, natural occurrence and medicinal value of ephedrine and its

analogs

Compound name	Chemical Structure/related information	Natural occurence	Medicinal value	Ref
Ephedrine	HO CH ₃ CH ₃	The principal pharmacologically-active compound in <i>Ephedra</i> <i>sinica</i> .	Treatment of the symptoms of hay fever, asthma, and nasal congestion.	1
(+)-Pseudoephedrine	HOMING CH ₃ HOMING CH ₃ CH ₃ CH ₃ It differs than ephedrine in the special orientation of the –OH group.	Major alkaloid in other spp. viz. Ephedra intermedia and Ephedra lomatolepis.	Same as ephedrine.	1
<i>m</i> -Synephrine	HO, HN, CH ₃	It is chemically synthesized and does not occur naturally.	Approved by the Food and Drug Administration (FDA) as an over- the-counter synthetic drug ingredient used in nasal sprays and	2,3

	It possesses hydroxyl group in the meta- position on the benzene ring as opposed to the para-position for <i>p</i> - synephrine and <i>p</i> - octopamine.		decongestants as alternative to FDA-banned ephedrine- containing products.	
<i>p-</i> Synephrine	HO HO OH	It cccurs in many citrus fruits such as <i>Citrus</i> <i>aurantium</i> L. (bitter orange), Marrs sweet oranges (<i>C. sinensis</i>), grapefruits (<i>C. paradisi</i>), mandarins (<i>C. reticulata</i>) and clementines (<i>C.</i> <i>clementina</i>).	It is added to thermogenic supplements used for weight loss.	4,5
<i>p</i> -Octopamine	How how here NH_2 How how here NH_2 OH N-demethylated derivative of p - synephrine.	A well-known neurotransmitter precursor and neuromodulator produced at trace level in human brain and nerve tissues. Also it occurs naturally in various citrus plants such as lemon (<i>Citrus limon</i>) and various invertebrates such as mollusks in which octopamine receptors have been identified in mammals and insects.	It is used orally for weight management and sports performance.	2

$\begin{array}{c} NH_2\\ F_2\\ CH_3\\ T_2\\ CH_3\\ T_2\\ CH_3\\ T_2\\ T_2\\ C_2\\ T_3\\ T_2\\ T_2\\ T_2\\ T_3\\ T_2\\ T_2\\ T_3\\ T_2\\ T_2\\ T_3\\ T_2\\ T_3\\ T_2\\ T_3\\ T_2\\ T_3\\ T_3\\ T_2\\ T_3\\ T$
from pseudoephedrine. It was also biosynthesized <i>in</i> <i>planta</i> and reported in <i>Acacia rigidula</i> though at trace levels. The α -carbon in amphetamine is chiral and produces two optical isomers (<i>d</i> and <i>b</i> mith. Jiffment
The α -carbon in ampletamine is chiral and produces two optical isomers (dend b mithed different)
CH3It was also biosynthesized in planta and reported in Acacia rigidula though at trace levels.Dexamphetamine, Duromine, and Ritalin for attention deficit hyperactivity disorder. The <i>l</i> - isomer (2R) is often found in inhalers prescribed for asthma and congestion
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HN Berlandleri. psychostimulani,
CH ₃ hallucinogenic
effects.
<i>I</i> -Norepinephrine It was found to be naturally It has significant 9,10
(<i>I</i> -Noradrenaline)
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Solanum tuberosum, vasoconstriction.
Fabaceae and
Portulacaceae.
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ОН
A chiral endogenous

catecholamine, which		
is among the major		
neurotransmitters.		

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