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Latest new compounds

D-Ala²-[tyrosyl]-3,5-³H] enkephalin
(5-L-methioninamide)
TRK.564 15–30Ci/mmol

[G-³H] Kainic acid
TRK.566 2–10Ci/mmol

[methyl-1', 2'] Thymidine
TRK.565 70–100Ci/mmol

[11,12(n)-³H] Chenodeoxycholic acid
TRK.562 25–50Ci/mmol

[11,12(n)-³H] Lithocholic acid
TRK.560 25–50Ci/mmol

17α-Hydroxy-11-deoxy [1, 2-³H] corticosterone
TRK.557 40–60Ci/mmol

Please enquire for further details

The Radiochemical Centre

Amersham

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LECTINS
FROM SIGMA

Although we have a lot to learn about these agglutinins, we are now preparing numerous Lectins and Lectin-conjugates with various purities. A Data Sheet enclosed with each shipment indicates a) agglutination levels with appropriate red blood cells b) levels of various sugars that inhibit red cell agglutination c) disc electrophoresis data and d) mitogenic levels when applicable.

We will look forward to comment, criticism and suggestions, so that Sigma will ultimately offer the most complete list of high-purity Lectins available anywhere in the world. Many reports indicate the need for Calcium and Manganese ions to "stabilize" the Lectin. Pending further studies and comments from our customers, most of our Lectins will contain about 0.05% free Calcium and 0.05% free Manganese. Although not shown on most labels, competitive preparations we have tested generally contain Calcium and Manganese also.

L 2380 From Bandeiraea simplicifolia seeds
Major affinity: Methyl-α-D-Galactopyranosyl residues
Agglutinates Type A red cells at approx. 10 μg
Lectin, and Type A red cells at approx. 50 μg
Lectin per ml of 2% red cells

L 8879 From Ricinus communis (Castor Bean), Type I
Major affinity: N-Acetylgalactosamine residues
Agglutinates Type A red cells at approx. 20 μg
Lectin per ml of 2% red cells

L 9004 From Ricinus communis (Castor Bean), Type II
Major affinity: Galactose residues
Agglutinates Type A red cells at approx. 1 μg
Lectin per ml of 2% red cells

L 9129 From Ricinus communis (Castor Bean), Crude
Agglutinates Type A red cells at approx. 10 μg
Lectin per ml of 2% red cells

L 5380 From Plicatum sativum (Garden pea)
Major affinity: Glucose and Mannose residues
Agglutinates Type O red cells at approx. 5 μg
Lectin per ml of 2% red cells

L 5505 From Ulex europaeus (Gorse)
Major affinity: L-Fucose residues
Agglutinates Type O red cells at approx. 20 μg
Lectin per ml of 2% red cells

From Dolichos biflorus (Horsegram)

L 0256 From Limulus polyphemus (Shoeshorse Crab)
"Limulin" from hemolymph
Major affinity: Sialic Acid residues
Osphosphate red cells at 40 μg
Lectin per ml of 1.5% red cells

C 2631 From Canavalia ensiformis (Jack Beans)
Concanavalin A, Grade III
100 mg 3.49
60 mg 15.74
85% Sodium Chloride
1 g 26.23
Sizes based on protein content

C 2010 From Canavalia ensiformis (Jack Beans)
Concanavalin A, Grade IV
25 mg 1.92
100 mg 4.48
Salt-free
250 mg 8.57
Substantially free of carbohydrate
1 g 30.42
Prices based on protein content

L 5755 From Abrus precatorius (Jequirity Bean)
Major affinity: Galactose residues
Agglutinates Type A red cells at approx. 1 μg
Lectin per ml of 2% red cells

L 9505 From Abrus precatorius (Jequirity Bean)
Toxic moiety; contains some Agglutinin.
Major affinity: Galactose residues
Agglutinates Type A red cells at approx. 2 μg
Lectin per ml of 2% red cells

L 9254 From Lotus tetragonolobus (Asparagus pea, Winged pea)
Major affinity: Fucose residues
Agglutinates Type O red cells at approx. 20 μg
Lectin per ml of 2% red cells

L 8629 From Phaseolus vulgaris (Kidney Bean), Type III
Major affinity: Phthaloagglutinin
Agglutinates Type A red cells at approx. 10 μg
Lectin per ml of 2% red cells

L 8504 From Phaseolus vulgaris (Kidney Bean), Type IV
Leucoagglutinin
Does not agglutinate Type A or O red cells.
Induces mitosis in Human leucocytes at approx. 2.5 μg per ml of culture media.

L 8754 From Phaseolus vulgaris (Kidney Bean), Type V
Phthaloagglutinin.
Agglutinates Type A red cells at approx. 10 μg
Lectin per ml of 2% red cells

L 5880 From Lens culinaris (Lentil)
Major affinity: Glucose and Mannose residues
Agglutinates Type A red cells at approx. 4 μg
Lectin per ml of 2% red cells

From Phaseolus imensis (Lima Bean)

L 0881 Fr m Arachis hypogea (Peanut)
"Major affinity: Galactose residue
Agglutinates desribated Human red blood cells
at approx. 10 μg Lectin per ml of 2% red cells

L 9379 From Phytolacca americana
"Pokeweed Mitogen, crude"
Agglutinates Type O red cells at approx. 60 μg
Lectin per ml of 2% red cells

L 8004 From Glycine max (Soybean), Type VI
Major affinity: N-Acetylgalactosamine residues
Agglutinates Type A red cells at approx. 20 μg
Lectin per ml of 2% red cells

L 8379 From Glycine max (Soybean), Type VII
Major affinity: N-Acetylgalactosamine residues.
Three major bands on electrophoresis
Agglutinates Type A red cells at approx. 20 μg
Lectin per ml of 2% red cells

L 8129 From Glycine max (Soybean), Crude
"Major affinity: Bacteriococcal fraction.
Agglutinates Type A red cells at approx. 250 μg
Lectin per ml of 2% red cells.

L 1005 From Triticum virgatum (Wheat germ)
Major affinity: N-Acetylgalactosamine residues
Agglutinates Type A red cells at approx. 20 μg
Lectin per ml of 2% red cells

8/77

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Tools for Biogenic Amine Research

3-Hydroxy-4-methoxyphenethyamine, 2-methyl-1,2,3,4-tetrahydro-6,7-isouquinolinediol

Generally, S-adenosylmethionine (SAM) has been considered the most important, in fact, the universal methyl donor for O- and N-methylation of biogenic amines, in biosynthetic as well as degradative processes. Various types of brain N-methyltransferases have been described, but the idea of N-methylation of dopamine in the brain had never been considered. Since several hypotheses for the origin of schizophrenic behavior implicates an excessive N-methylation process in the brain, the possibility of N-methylation of dopamine in that organ was investigated. Studies revealed what seemed to be an enzyme which did not require SAM, but 5-methyltetrahydrofolic acid (5-MTHF) as the specific methyl donor for the N-methylation of dopamine to epinephrine in rat brain. (5-MTHF is a common methyl donor for single-carbon transfer reactions but not for biogenic amines.)

\[
\begin{align*}
\text{HO} & \text{C}_6\text{H}_4\text{OH}_2 \quad \text{N} \quad \text{CH}_3 \\
\text{HO} & \text{C}_6\text{H}_4\text{NH}_2 \\
\text{HO} & \text{C}_6\text{H}_4\text{NHCH}_3 \\
\text{HO} & \text{C}_6\text{H}_4\text{NHCH}_3 
\end{align*}
\]

Results indicated that 3-hydroxy-4-methoxyphenethylamine (1, 4-O-methylamphetamine, 4-methoxy-α-methylamphetamine) was a more stable substrate than dopamine for studying the N-methylation reaction. In fact, a simple, rapid procedure employing 1 as a substrate was developed for measuring the activity and distribution of the enzyme from various sources, e.g., brain, kidney and liver.

In the case of indolealkylamine substrates, difficulties were encountered in the identification of the methylated metabolites. Further investigation led to the suspicion that more than a simple methyl transfer was involved. Closer examination of the incubation mixtures revealed the presence of formaldehyde. Thus, incubation of dopamine with 5-MTHF and the enzyme preparation resulted in the enzymatic formation of formaldehyde, which then reacted nonenzymatically (in a Pictet-Spengler-type condensation) with dopamine to form 1,2,3,4-tetrahydro-6,7-isouquinolinediol (3) identified by tlc and gc-ms. Moreover, when pig-brain enzyme was incubated with epinephrine, the alkaloid, 2-methyl-1,2,3,4-tetrahydro-6,7-isouquinolinediol (2), was identified by tlc.

The products of incubation of 1 contained the corresponding 7-methoxy-1,2,3,4-tetrahydro-6-isoquinolinel. Expectedly, indolealkylamines were found to yield the corresponding β-carbolines.

Aldrich now makes available two important products involved in these studies.

References

19,596-0 3-Hydroxy-4-methoxyphenethylamine hydrochloride (4-O-methylamphetamine)...... 10mg $6.00 50mg $20.00

19,597-9 2-Methyl-1,2,3,4-tetrahydro-6,7-isouquinolinediol hydrochloride........ 10mg $6.00 50mg $20.00

16,113-6 3-Hydroxytyramine hydrobromide..... 10g $5.50 50g $16.00

H6025-5 3-Hydroxytyramine hydrochloride 5g $8.00 10g $14.00

86,043-3 Epinephrine hydrochloride............. 1g $8.00

For a listing of catecholamines, please send for our catecholamine data sheet.

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