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The enzymatic determination of serum cholesterol has recently been reported (1,2). This method involves the hydrolysis of cholesterol esters to free cholesterol and fatty acids. Cholesterol is then oxidized to cholest-4-en-3-one with the production of hydrogen peroxide. Hydrogen peroxide production is determined enzymatically and followed spectrophotometrically. Cholesterol ester hydrolase and cholesterol oxidase are crucial elements of this system.

Miles Research Products is pleased to offer cholesterol ester hydrolase extracted from bovine pancreas by a method developed in our laboratories. Our preparation has a CEH activity of approximately 0.2 units per milligram of material. It is supplied as a freeze-dried powder containing about 45% phosphate buffer salts and about 20% sodium cholate. The residual proteolytic enzyme content has been specifically reduced to yield a stable product. Further information and assay details are available on request.

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2) Tarbutton and Gunter, (1974), Clinical Chemistry, 20, 724
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5 ALFRED STREET, OXFORD OX1 4HB, ENGLAND
Spin labeling, a term coined by Stone et al., refers to the use of stable free radicals as reporter groups. The paramagnetic resonance spectrum of the spin label, or the effect of the spin label on nuclear resonance spectra, or both, can provide significant information on molecular structure and dynamics in biological systems. The most commonly used spin labels are molecules which contain a nitrooxide moiety.

Nitrooxides are unreactive under a variety of experimental conditions, stable in aqueous solutions to moderate heating (up to 70-80°C) and to pH changes over the range of 3 to 10, and nontoxic to most biological systems. They can be reduced to the hydroxylamines by many mild reducing agents, but are not affected by two-electron reductants. Reduction to the secondary amine requires stronger reducing agents than are usually encountered in biological systems.

Nitroxide spin labels have been extensively used in the studies of biomembranes and membrane models, the geometry of binding sites (e.g., antibody combining sites, enzyme active sites), conformational changes in macromolecules (proteins such as hemoglobin, nucleic acids such as rRNA), enzyme mechanisms, and immunosassays of drugs. For the aforementioned studies, compounds such as ADP, ATP, vitamin B12, hemoglobin, morphine, etc., have been spin-labeled with nitroxides.

The preformed nitroxide spin labels we offer carry amino, hydroxyl or oxo functions through which specific compounds of interest may be attached. Alternatively, a 4,4-dimethyl-2,2,5,5-tetramethyl-2-oxazolidone-O-oxyl (or simply "doxyl") moiety can be synthesized by the method of Keana et al. from a keto group in the molecule to be studied.

[Chemical structure images]

In addition to their use as spin labels, nitroxides find other applications simply because they are stable free radicals, e.g., 17,614-1 and 17,948-5 are inhibitors in the polymerization of dienes and vinyl compounds. These two compounds are efficient antioxidants in triarylboranes, lipids, feeds (to stabilize carotene), and are inhibitors in the thermooxidative degradation of polycaproamide (nylon). They also possess antitumor activity, particularly against hematocytolplasts in the peripheral blood and bone marrow.

References:

Some Reviews:

Spin labels, precursors and reagents:
15,568-3 3-Carbamoyl-2,2,5,5-tetramethyl-3-........... 1g $16.00
pyrrolin-1-oxo, free radical
5g $60.00
16,391-0 3-Carbamoyl-2,2,5,5-tetramethyl-3-........... 1g $12.05
pyrrolin-1-oxo, free radical
5g $40.10
16,394-5 4-Amino-2,2,6,6-tetramethyl-3-............... 1g $9.00
piperidinoxy, free radical
5g $30.00
17,614-1 4-Hydroxy-2,2,6,6-tetramethyl-3-............. 1g $14.10
piperidinoxy, free radical
5g $50.00
17,948-5 4-Oxo-2,2,6,6-tetramethyl-3-.................. 1g $8.50
piperidinoxy, free radical
5g $28.00
11,573-8 4-Amino-2,2,6,6-tetramethyl-3-.............. 5g $10.00
piperidine 15.6g $50.00; 25g $60.00
11,574-6 2,2,6,6-Tetramethyl-4-piperidino.............. 10g $13.65
25g $19.55
11,576-2 2,2,6,6-Tetramethyl-4-piperidone............ 25g $14.10
hydrochloride 100g $37.05
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