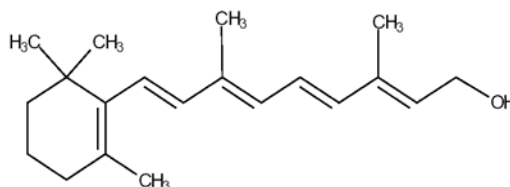


95146 Retinol Solution (Axerophthol, all-trans-3,7-Dimethyl-9-(2,6,6-trimethyl-1-cyclohexenyl)-2,4,6,8-nonatetraen-1-ol, Vitamin-A-alcohol, Vitamin A, Vitamin A1)

CAS number: 68-26-8

Product Description:

Molecular weight: 286.5 g/mol
Formula: $C_{20}H_{30}O$
mp: 62-64°C (solvent free)⁴
 ϵ (325nm): 52,480 (ethanol)³
 E (324-325nm): 1835 (1% in ethanol)⁴



Retinol exhibits fluorescence properties with maximum absorbance and emission at 325 nm and 520 nm (cyclohexane), respectively.⁵

One unit of vitamin A (The USP unit is the same as the International Unit^{6,2}) is equal to 0.3 ug of the pure all-trans isomer of retinol which is equivalent to 0.344 ug of all-trans retinyl acetate.⁷

After opening the bottle it is recommended to set the package under argon atmosphere and put it back into the fridge protected from light.

Method of preparation:

Retinol all trans (Retinol) is synthetically prepared by Fluka. Many procedures have been reported for methods of synthesis which include synthesis from retinal⁸ and total synthesis from various starting compounds.^{4,9} Methods of purification and various assays for purity determination have been described.^{4,10}

Applications:

The isolation of retinol from human plasma has been described.¹⁴ Retinol is an effective antioxidant displaying lipoperoxy radical scavenging activity.¹⁵ The interactions between Retinol and Vitamin E (α -tocopherol) in suppressing lipid peroxidation were observed in bovine retinal membrane preparations.¹³ Retinol may influence the production of transition vesicles by stimulating the activity of a protein disulfide isomerase-like activity involved in vesicle formation.¹² Retinol may be involved in immune system mechanisms; an Retinol deficiency will depress the immune response producing a negative effect on both humoral and cellular immunity.¹⁶ Retinol (10 μ M) and other retinoid compounds effectively induced sanguinarine and chelerythrine (benzophenanthridine alkaloids) accumulation in suspension-cell cultures of *Sanguinaria canadensis* in a way similar to fungal elicitation.¹¹ Retinol (10 μ M) stimulated DNA synthesis and possibly repair mechanisms in Sertoli cells of rat.¹⁷

Retinol and its metabolites, including retinoic acid, are part of the retinoid class of compounds, involved in vision, normal embryo morphogenesis and in the regulation of proliferation and differentiation of a number of cell types. Current information and hypotheses on the absorption, transport, storage and metabolism of this fat soluble Vitamin A (retinol) have been reviewed.¹⁸ Studies on Retinol metabolism including its mobilization and transport in plasma and in tissues via serum and cytosolic retinol-binding proteins have been described.¹⁹

Precautions:

For Laboratory Use Only. Not for drug, household or other uses.

References

1. Sigma-Aldrich Material Safety Data Sheet
2. Ph Eur II, 217 (1983)
3. Dawson, R.M.C. et al., eds. Data for Biochem. Res. 3rd edition, Clarendon Press, Oxford, 136, 1987.
4. Specifications and Criteria for Biochemical Compounds, 3rd edition, National Academy of Sciences, 78, (1984).
5. Radda, G.K. and Smith, D.S., A fluorescent probe for membrane lipids, FEBS Letters, 9, 287, (1970).
6. Martindale, The Extra Pharmacopoeia, 30th ed., 1051, (1993).
7. The Merck Index, 12th edition, #10150, p. 1709.
8. Wendler, N.L. et al., J. Am. Chem. Soc. 72, 234, (1950).
9. Mukaiyama, T. and Ishida, A., Chem. Letters. 1201, (1975).
10. Kofler, M. and Rubin, S.H., Vitamins, Hormones 18, 315, (1960).
11. Mahady, G.B. and Beecher, C.W.W., Natural Product Letters, 8, 173, (1996).
12. Jacobs, E. et al., Life Sciences, 59, 273, (1996).
13. Tesoriere, L. et al., Biochem. Mol. Biol. Int. 37, 1, (1995).
14. Dueker, S.R. et al., Anal. Chem. 66, 4177, 1994.
15. Livrea, M.A. and Tesoriere, L., Methods in Enzymology, 234, 7401, (1994).
16. Chytil, F.J., Nutr. Immunol., 4, 35, (1995).
17. Moreira, J.C.F. et al., Med. Sci. Res. 24, 383, (1996).
18. Blomhoff, R. et al., Science, 250, 399, (1990).
19. Goodman D.S., Review: Vitamin A metabolism Fed. Proc. 39, 2716 (1980)
20. Sebrell, W.H. and Harris, R.S. (eds) The Vitamins, Vol. 1, Academic Press, NY, 2nd ed., 1967 - descriptive information on the chemistry, physicochemical properties and physiology of Vitamin A.
21. Morre, D.M. "Intracellular Actions of Vitamin A" Intl. Rev. Cyt. 135, 1, 1992.
22. Sigma-Aldrich Production & Quality Control