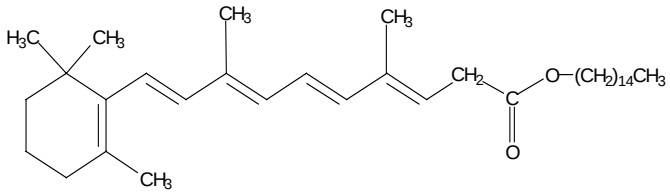
ProductInformation

ALL TRANS RETINOL PALMITATE

Sigma Prod. No. R3375

CAS NO: 79-81-2
SYNONYMS: Retinyl Palmitate; Vitamin A_1 Palmitate[1]; Aquasol A; Arovit; All Trans Retinyl Palmitate; Vitamin A Palmitate[2]



PHYSICAL DESCRIPTION

Appearance: Clear to hazy yellow to orange viscous liquid or semisolid.[3]
Molecular formula: $C_{36}H_{6O}O_2$
Molecular weight: 524.9.
Density: Approx. 0.90-0.95 g/ml.[4]

Melting Point: Approx. 28°-29°C[1]
$E^{1\%}$(325 nm) = 1000 (ethanol)[1]
$E^{1\%}$ (325-328 nm) = 975 (ethanol)[5]
Fluorescence: excitation and emission wavelengths are 325 nm and 470 nm, respectively.[6]

GENERAL NOTES:

Activity: About 1,800,000 USP units/gram.[4] The activity of one International Unit of Vitamin A (equivalent to a USP unit) is contained in 0.3 µg of all-trans retinol and in 0.55 µg of all-trans retinol palmitate.[7] Each gram contains approximately 9 mg butylated hydroxytoluene to retard oxidation.[4] Retinol palmitate (RP) contains about 1,817,000 I.U./g.[1]

The product is essentially free of retinol, various isomeric forms of retinol that have lower biological activity and other retinol degradation products that are not biologically active.[4]

RP is the major ester of retinol located in the retina, liver, and intestine of many vertebrates.[1] Retinyl esters, including RP which may facilitate vitamin A absorption, storage and function, are the molecular storage form for retinol in the liver extrahepatic tissues and retinal pigment epithelium.[8] RP is a possible mutagen and possible carcinogen. See information on labeling and on the Sigma Material Safety Data Sheet for handling information.

METHOD OF PREPARATION:

The product is synthetically prepared.[4] Methods for the synthesis and purification[9] of RP as well as methods for purity determination[1] have been described. High Performance Liquid Chromatography (HPLC) methods for the separation of RP from other esters and for the analysis of RP have been reported.[10,11]

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STABILITY / STORAGE AS SUPPLIED:

RP when kept in the sealed amber ampule (packaged under an inert atmosphere) and stored at 2-8°C in the dark should be stable for at least one year.[3]

SOLUBILITY / SOLUTION STABILITY:

RP is insoluble in water but soluble in chloroform, ether, and vegetable oil,[4] i.e., corn oil.[12]. RP is slightly soluble in alcohol.[4] A clear yellow solution is obtained at about 50 mg/ml in chloroform.[3] RP solid and solutions are sensitive to air, light and heat. RP solutions are reasonably stable in the dark, at -20°C in peroxide-free and acid-free organic solvents[1] (esters of retinol are more stable than retinol).[5] Store solutions under an inert atmosphere, in the dark and at -20°C.

USAGE / APPLICATIONS:

RP is the predominant fatty acid ester isolated from retinal tissue and synthesized in the microsomes of livers in the animals studied.[6,13] RP exhibited adjuvant properties in an avian vaccine containing Newcastle Disease virus.[14] Photochemical studies of RP and other retinoids to elucidate mechanisms of retina damage indicate these compounds can initiate free radical reactions when exposed to light above 300 nm in methanol or DMF.[15]

CITED REFERENCES:

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15. Dillon, J. et al., *Photochem. Photobiol.*, 63, 680, (1996).