IUPAC-IUB Commission on Biochemical Nomenclature

The Nomenclature of Lipids: Notice of Revisions

The following changes have been approved by the IUB-IUPAC Commission on Biochemical Nomenclature. The corrected paragraphs follow; for their location as printed in J. Biol. Chem., 242, 4845 (1967) refer to rule numbers.

1.6. Other generic terms may be coined as needed. These should be patterned after the names of individual compounds (see "1. Lipids Containing Glycerol. A. Individual Compounds") and should indicate the type of substituent of glycerol by such prefixes as acyl, alkyl, or alk-1'-enyl (for alk-1'-en-1'-yl, i.e. R-CH=CH-). If the nature of these substituents cannot be specified, the prefix "radyl" may be used.

Comment—If the term alk-1'-enyl has to be used repeatedly it may be shortened to alkenyl if an author has stated that he is using alkenyl in this restricted sense.

Examples for Rules 1.4 and 1.6:
Phosphatidic ester
1-Alk-1'-enyl-2-acyl-sn-glycerophosphoric ester
O-(Diradylglycerophosphoryl)-L-serine
O-(1-Acyl-sn-glycerol-3-phosphoryl)ethanolamine
Triacylglycerol
Diacyl-sn-glycerol-3-phosphoryl-1'-sn-glycerol or 3-sn-phosphatidyl-1'-sn-glycerol for structure (IX)

\[
\begin{align*}
\text{R'CO}_2^- & \quad \text{CH}_2^- \quad 1 \\
\text{R''CO}_2^- & \quad \text{CH} = \text{CH}^- \quad 2 \\
\text{CH}_3^- & \quad \text{O}^- \quad 3 \\
\text{PO(OH)}^- & \\
\text{CH}^- & \quad \text{O}^- \quad 1' \\
\text{HO}^- & \quad \text{CH} = \text{CH}^- \quad 2' \\
\text{CH}_3\text{OH}^- & \quad 3' \\
\text{sn-numbering} & \\
\text{IX} & \\
\end{align*}
\]

2.2. This name may be modified by prefixes to indicate additional substituents or higher or lower homologues. The prefixes to designate homologues should be derived by deleting the terminal "ne" from the systematic names of the hydrocarbons (IUPAC, Nomenclature of Organic Chemistry, J. Amer. Chem. Soc., 82, 5545 (1960) Rule A-1) that have the same number of carbon atoms as the principal chains of the long chain bases.

2.4. Names of unsaturated compounds are derived from the names of the corresponding saturated compounds by replacing the ending "ane" with the appropriate ending denoting unsaturation such as "ene," "adiene," "yne." A double bond is presumed to have the trans orientation of the carbon chain unless cis or unknown geometry is specified by the terms "cis-" or "X-" preceding the number that indicates the position of the double bond.

Examples for Rules 2.1 to 2.4:
4D-Hydroxysphinganine for phytosphingosine
4X-Hydroxy-2X,3X-eicosasphinganine for the cerebrin base described by M. Prostenik and N. Z. Stanačev (Chem. Ber., 91, 961 (1958))
4Sphingenine for sphingosine
cis-4-Sphingenine for the geometric isomer of sphingosine
2L Sphinganine for the C-2 epimer of sphinganine

4.1. Fatty acids and their radicals should be named according to the IUPAC Rules for the Nomenclature of Organic Chemistry (Pure Appl. Chem., 11, 1 (1965), Rule C-4). Fatty acids should always be numbered with the carboxyl group as C 1.

Comment—Regularities, such as the position of double bonds in some naturally occurring fatty acids, that are not apparent if numbering is done in this manner, can be indicated without violation of this principle of numbering if the position of the double bond is stated in the form \((n-z)\) where \(n\) indicates the number of carbon atoms in the chain. The positions of the double bonds of, for example, linoleic acid and similar acids may be given as \((n-9)\) and \((n-6)\), but not \(\omega 9\) and \(\omega 6\) ( \(-\) is a minus sign).
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