

A Periodic Table of Monosaccharides

The table is organized into groups based on carbon count (3, 4, 5, 6, 7, 8, 9, 10) and functional groups (Aldehydes, Ketoses, Amino Sugars, Uronic Acids, Deoxy Sugars). Each entry includes the Name, Symbol, Formula, and Mass.

Carbon Count	Aldehydes	Ketoses	Amino Sugars	Uronic Acids	Deoxy Sugars
3	Glyceraldehyde (Glc)				
4	Erythrose (Ery)	Threose (Thre)			
5	Ribose (Rib)	Xylose (Xyl)	Aminoribose (AminRib)		
6	Glucose (Glc)	Fructose (Fru)	Aminoglucose (AminGlc)	Glucuronic Acid (GlcA)	Deoxyglucose (dGlc)
7	Heptose (Hept)	Sedoheptulose (SedoHept)	Aminoheptose (AminHept)	Hepturonic Acid (HeptA)	Deoxyheptose (dHept)
8	Octose (Oct)	Octulose (Octul)	Amino-octose (AminOct)	Octuronic Acid (OctA)	Deoxyoctose (dOct)
9	Nonose (Non)	Nonulose (Nonul)	Aminononose (AminNon)	Nonuronic Acid (NonA)	Deoxynonose (dNon)
10	Decose (Dec)	Deculose (Decul)	Aminodecose (AminDec)	Decuronic Acid (DecA)	Deoxydecose (dDec)

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Description

It is important to recognize the great diversity of monosaccharides commonly encountered in animals, plants, and microbes, as well as to organize them in a visually interesting style that also emphasizes their similarities and relatedness. This article discusses the nature of building blocks, monosaccharides, and monosaccharide derivatives – terms commonly used in discussing glycomolecules found in nature. To aid in awareness of monosaccharide diversity here is presented a Periodic Table of Monosaccharides. The rationale is given for the construction of the Table and the selection of 104 monosaccharides, which is largely based on those presented in the KEGG and SNFG websites of monosaccharides and includes room to enlarge as new discoveries are made. The Table should have educational value and is intended to capture the attention and foster the imagination of those unfamiliar with glycosciences and encourage researchers to delve deeper into this fascinating area.

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	Aldoses			Ketoses		Aminosugars						Uronic Acids						
triose	Glycinaldehyde Gly C ₃ H ₅ O ₃ 90.08			Dihydroxyacetone DHA C ₃ H ₅ O ₃ 90.08														
	Threose Thr C ₄ H ₇ O ₅ 126.09		Erythrose Ery C ₄ H ₇ O ₅ 126.09	Erythrulose Eru C ₄ H ₇ O ₅ 126.09														
tetrose	Ribose Rib C ₅ H ₉ O ₆ 150.13	Xylose Xyl C ₅ H ₉ O ₆ 150.13	Allose Eib C ₅ H ₉ O ₆ 150.13	Ribulose Ribu C ₅ H ₉ O ₆ 150.13	Xylulose Xylu C ₅ H ₉ O ₆ 150.13													
	Arabinose Ara C ₅ H ₉ O ₆ 150.13	Lyxose Lyx C ₅ H ₉ O ₆ 150.13	Apiose Api C ₅ H ₉ O ₆ 150.13															
pentose	Glucose Glc C ₆ H ₁₂ O ₆ 180.16	Galactose Gal C ₆ H ₁₂ O ₆ 180.16	Mannose Man C ₆ H ₁₂ O ₆ 180.16	Fructose Fru C ₆ H ₁₂ O ₆ 180.16	Psicose Psi C ₆ H ₁₂ O ₆ 180.16	Glucosamine GlcN C ₆ H ₁₃ NO ₅ 179.17	Galactosamine GalN C ₆ H ₁₃ NO ₅ 179.17	Mannosamine ManN C ₆ H ₁₃ NO ₅ 179.17	Bacillosamine Bac C ₆ H ₁₃ NO ₅ 162.19	Desosamine Des C ₆ H ₁₃ NO ₅ 175.23	Allosamine AliN C ₆ H ₁₃ NO ₅ 179.17	Glucuronic acid GlcA C ₆ H ₁₀ O ₇ 194.14	Iduronic acid IdoA C ₆ H ₁₀ O ₇ 194.14	Mannuronic acid ManA C ₆ H ₁₀ O ₇ 194.14	N-Acetyl-6-deoxy-L-altrosamine L6dAltNAc C ₆ H ₁₅ NO ₆ 205.21			
	Altrose Alt C ₆ H ₁₂ O ₆ 180.16	Allose Ali C ₆ H ₁₂ O ₆ 180.16	Idose Ido C ₆ H ₁₂ O ₆ 180.16	Tagatose Tag C ₆ H ₁₂ O ₆ 180.16	Sorbose Sor C ₆ H ₁₂ O ₆ 180.16	Idosamine IdoN C ₆ H ₁₃ NO ₅ 179.17	Altrosamine AltN C ₆ H ₁₃ NO ₅ 179.17	Talosamine TalN C ₆ H ₁₃ NO ₅ 179.17	Gulosamine GulN C ₆ H ₁₃ NO ₅ 179.17	Muramic acid Mur C ₆ H ₁₃ NO ₇ 251.23	N-Acetyl-fucosamine FucNAc C ₆ H ₁₅ NO ₆ 205.21	L-Alduronic acid LAltA C ₆ H ₁₀ O ₇ 194.14	Guluronic acid GulA C ₆ H ₁₀ O ₇ 194.14	Fructuronic acid FruA C ₆ H ₁₀ O ₇ 194.14	N-Acetyl-6-deoxy-D-talosamine 6dTalNAc C ₆ H ₁₅ NO ₆ 205.21			
	Gulonic acid Gul C ₆ H ₁₀ O ₇ 180.16	Talonic acid Tal C ₆ H ₁₀ O ₇ 180.16					N-Acetyl-glucosamine GlcNAc C ₆ H ₁₃ NO ₅ 221.21	N-Acetyl-galactosamine GalNAc C ₆ H ₁₃ NO ₅ 221.21	N-Acetyl-mannosamine ManNAc C ₆ H ₁₃ NO ₅ 221.21	N-Acetyl-quinovosamine QuiNAc C ₆ H ₁₃ NO ₅ 221.21	N-Acetyl-rhamnosamine RhaNAc C ₆ H ₁₃ NO ₅ 221.21	N-Acetyl-sialosamine SiaNAc C ₆ H ₁₃ NO ₅ 221.21	Takuronic acid TakA C ₆ H ₁₀ O ₇ 194.14	Galacturonic acid GalA C ₆ H ₁₀ O ₇ 194.14	Alduronic acid AlidA C ₆ H ₁₀ O ₇ 194.14			
								N-Acetyl-altrosamine LAltNAc C ₆ H ₁₃ NO ₅ 221.21	N-Acetyl-gulosamine GulNAc C ₆ H ₁₃ NO ₅ 221.21	N-Acetyl-idosamine LIdoNAc C ₆ H ₁₃ NO ₅ 221.21	N-Acetyl-talosamine TalNAc C ₆ H ₁₃ NO ₅ 221.21	N-Glycolyl-muramic acid MurNGc C ₆ H ₁₃ NO ₇ 309.27	4-O-Methyl-D-glucuronic acid meGlcA C ₆ H ₁₀ O ₇ 208.17					
hexose	(D or L)-Glycero-D-manno-heptulose ManHep C ₇ H ₁₄ O ₇ 216.18				Sedoheptulose Sed C ₇ H ₁₄ O ₇ 216.18	Mannoheptulose ManH C ₇ H ₁₄ O ₇ 216.18												
Octose					D-erythro-L-galacto-octose Oct C ₈ H ₁₆ O ₈ 240.21		3-Deoxy-D-manno-2-octulonic acid Kdo C ₈ H ₁₆ O ₈ 238.19	Erythrulose Erw C ₈ H ₁₆ O ₈ 236.26	Methylthioinosanediol Mtl C ₈ H ₁₅ NO ₈ 253.32	Nonose								
													Pseudaminic acid Pse C ₉ H ₁₈ O ₉ 258.25	Acetaminic acid Aci C ₉ H ₁₈ O ₉ 250.25	Legonaminic acid Leg C ₉ H ₁₈ O ₉ 250.25	4-Epi-legonaminic acid 4eLeg C ₉ H ₁₈ O ₉ 250.25	8-Epi-legonaminic acid 8eLeg C ₉ H ₁₈ O ₉ 250.25	8-Epiacetaminic acid 8eAci C ₉ H ₁₈ O ₉ 250.25
													3-Deoxy-D-glycero-D-galacto-non-2-ulonic acid Kdn C ₉ H ₁₈ O ₉ 268.27	Neuraminic acid Neu C ₉ H ₁₈ NO ₉ 267.25	N-Acetyl-neuraminic acid Neu5Ac C ₉ H ₁₉ NO ₉ 309.27	N-Glycolyl-neuraminic acid Neu5Gc C ₉ H ₁₉ NO ₉ 325.27	Fucosaminic acid Fus C ₉ H ₁₈ NO ₉ 309.27	

NameGlucose

FormulaGlc

Symbol

Mass

Category

- 1. News