

A Periodic Table of Monosaccharides

The table is organized into groups: Aldoses, Ketoses, Aminosugars, Uronic Acids, Deoxy sugars, Octoses, Nucleosides, and Decoses. Each cell contains the name, symbol, formula, and mass of the monosaccharide.

Name	Symbol	Formula	Mass
Triose	Triose	$C_3H_6O_3$	150
Tetraose	Tetraose	$C_4H_8O_5$	180
Pentose	Pentose	$C_5H_{10}O_5$	150
Hexose	Hexose	$C_6H_{12}O_6$	180
Heptose	Heptose	$C_7H_{14}O_7$	196
Octose	Octose	$C_8H_{16}O_8$	216
Nonose	Nonose	$C_9H_{18}O_9$	234
Decose	Decose	$C_{10}H_{20}O_{10}$	252

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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						
iose	Glycosiddehyde Gly C ₃ H ₆ O ₃ 90.08			Dihydroxyacetone DHA C ₃ H ₆ O ₃ 90.08														
rose	Threose Thr C ₄ H ₈ O ₄ 126.09	Erythrose Ery C ₄ H ₈ O ₄ 126.09		Erythrulose Eru C ₄ H ₈ O ₄ 126.09														
tose	Ribose Rib C ₅ H ₁₀ O ₅ 150.13	Xylose Xyl C ₅ H ₁₀ O ₅ 150.13	Ebiose Eib C ₅ H ₁₀ O ₅ 150.13	Ribulose Ribu C ₅ H ₁₀ O ₅ 150.13	Xylulose Xylu C ₅ H ₁₀ O ₅ 150.13													
	Araabinose Ara C ₅ H ₁₀ O ₅ 150.13	Lyxose Lyx C ₅ H ₁₀ O ₅ 150.13	Apiose Api C ₅ H ₁₀ O ₅ 150.13															
xose	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 ₁₁ NO ₅ 179.17	Galactosamine GalN C ₆ H ₁₁ NO ₅ 179.17	Mannosamine ManN C ₆ H ₁₁ NO ₅ 179.17	Bacillosamine Bac C ₆ H ₁₁ NO ₅ 162.19	Desosamine Des C ₆ H ₁₁ NO ₅ 175.23	Ailosamine AiIN C ₆ H ₁₁ 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-D-glucosamine L6dAltNAc C ₆ H ₁₁ NO ₆ 205.21			
	Altrose Alt C ₆ H ₁₂ O ₆ 180.16	Alose All 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 ₁₁ NO ₅ 179.17	Altrosamine AltN C ₆ H ₁₁ NO ₅ 179.17	Talosamine TalN C ₆ H ₁₁ NO ₅ 179.17	Glucosamine GulN C ₆ H ₁₁ NO ₅ 179.17	Muramic acid Mur C ₆ H ₁₁ NO ₅ 201.23	N-Acetyl-fucosamine FucNAc C ₆ H ₁₁ NO ₆ 205.21	L-Ascorbic acid LAltA C ₆ H ₈ O ₆ 194.14	Gulonic acid GulA C ₆ H ₁₀ O ₇ 194.14	Fructuronic acid FruA C ₆ H ₁₀ O ₇ 194.14	N-Acetyl-D-glucosamine 6dTalNAc C ₆ H ₁₁ NO ₆ 205.21			
	Glucose Gul C ₆ H ₁₂ O ₆ 180.16	Talose Tal C ₆ H ₁₂ O ₆ 180.16				N-Acetyl-glucosamine GlcNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-galactosamine GalNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-mannosamine ManNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-quinovosamine QuiNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-rhamnosamine RhaNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-allosamine AllNAc C ₆ H ₁₁ NO ₆ 221.21	Takronic acid TalA C ₆ H ₁₀ O ₇ 194.14	Galacturonic acid GalA C ₆ H ₁₀ O ₇ 194.14	Abronic acid AllA C ₆ H ₁₀ O ₇ 194.14				
						N-Acetyl-altrosamine LaltNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-gulosamine GulNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-idosamine LidoNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-talosamine TalNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-muramic acid MurNAc C ₆ H ₁₁ NO ₆ 205.27	N-Glycolyl-muramic acid MurNGc C ₆ H ₁₁ NO ₆ 309.27	4-O-Methyl-D-glucuronic acid meGlcA C ₆ H ₁₀ O ₇ 208.17						
tose	(D or L)-Glycero-D-manno-Heptulose ManHep C ₇ H ₁₄ O ₇ 210.18			Sedoheptulose Sed C ₇ H ₁₄ O ₇ 210.18	Mannoheptulose ManH C ₇ H ₁₄ O ₇ 210.18													
				Octose														
				D-erythro-L-galactooctose 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	Eriminose Erw C ₈ H ₁₆ O ₈ 236.26	Methylthioinosamide Mtl C ₈ H ₁₅ NO ₇ 255.32											
						Nonose												
						Pseudesmanic acid Pse C ₉ H ₁₈ O ₉ 258.25	Acetamansic acid Aci C ₉ H ₁₈ O ₉ 250.25	Legonansic acid Leg C ₉ H ₁₈ O ₉ 250.25	4-Ep-legonansic acid 4eLeg C ₉ H ₁₈ O ₉ 250.25	8-Ep-legonansic acid 8eLeg C ₉ H ₁₈ O ₉ 250.25	8-Epicetamansic acid 8eAci C ₉ H ₁₈ O ₉ 250.25							
						7-Deoxy-D-glycero-D-galacto-nonulosonic acid Kdn C ₉ H ₁₈ O ₉ 268.27	Neuraminic acid Neu C ₉ H ₁₈ NO ₉ 267.23	N-Acetyl-neuraminic acid Neu5Ac C ₉ H ₁₇ NO ₉ 309.27	N-Glycolyl-neuraminic acid Neu5Gc C ₉ H ₁₇ NO ₉ 375.27	Fucamansic acid Fus C ₉ H ₁₈ NO ₉ 309.27								

Name: Glucose
 Formula: C₆H₁₂O₆
 Symbol: Glc
 Mass: 180.16

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