

A Periodic Table of Monosaccharides

The table is organized into columns based on functional groups: Aldehydes, Ketoses, Aminosugars, Uronic Acids, and Deoxy sugars. Rows represent carbon numbers from 3 to 10. Each cell contains the name, symbol, formula, and mass of the monosaccharide. A legend indicates the format: Name (blue), Glyc (yellow), Symbol (green), Formula (red), and Mass (orange).

Carbon Number	Aldehydes	Ketoses	Aminosugars	Uronic Acids	Deoxy sugars
3	Triose				
4	Tetraose				
5	Pentose				
6	Hexose				
7	Heptose				
8	Octose				
9	Nonose				
10	Decose				

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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												
	Anabinose 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 ₅ 182.19	Desosamine Des C ₆ H ₁₁ NO ₅ 175.23	Ailosamine AilN 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	Gulosamine GulN C ₆ H ₁₁ NO ₅ 179.17	Muramic acid Mur C ₆ H ₁₁ NO ₆ 201.23	N-Acetyl-fucosamine FucNAc C ₆ H ₁₁ NO ₆ 205.21	L-Asuronic 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-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-quinosamine QuiNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-rhamnosamine RhaNAc C ₆ H ₁₁ NO ₆ 221.21	N-Acetyl-allosamine AilNAc C ₆ H ₁₁ NO ₆ 221.21	Takuronic acid TalA C ₆ H ₁₀ O ₇ 194.14	Galacturonic acid GalA C ₆ H ₁₀ O ₇ 194.14	Auronic acid AilA 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 ₇ 205.27	N-Glycolyl-muramic acid MurNGc C ₆ H ₁₁ NO ₇ 208.17	4-O-Methyl-D-glucuronic acid meGlcA C ₆ H ₁₀ O ₇ 208.17				
tose	D or L-Glycero-D-manno-Heptose 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	Nonose													
D-erythro-L-galacto- 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	Eminiose Erw C ₈ H ₁₆ O ₈ 236.26	Methylthioinosamide Mtl C ₈ H ₁₅ NO ₇ 255.32	Pseuxaminc acid Pse C ₉ H ₁₈ O ₉ 258.25	Acetaminc acid Aci C ₉ H ₁₈ O ₉ 250.25	Legonaminc acid Leg C ₉ H ₁₈ O ₉ 250.25	4-Ep-legonaminc acid 4eLeg C ₉ H ₁₈ O ₉ 250.25	8-Ep-legonaminc acid 8eLeg C ₉ H ₁₈ O ₉ 250.25	8-Ep-metaminc acid 8eAci C ₉ H ₁₈ O ₉ 250.25	7-Deoxy-D-glycero-D-galacto-nonulonic acid Kdn C ₉ H ₁₆ O ₈ 248.22	Neuraminc acid Neu C ₉ H ₁₈ NO ₉ 267.23	N-Acetyl-neuraminc acid Neu5Ac C ₉ H ₁₇ NO ₉ 269.27	N-Glycolyl-neuraminc acid Neu5Gc C ₉ H ₁₇ NO ₉ 275.27	Fucaminc acid Fus C ₉ H ₁₈ NO ₉ 269.27

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

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