

UNIVERSIDADE DE SÃO PAULO
QUÍMICA DE ALIMENTOS

Carboidratos-1



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2/2023

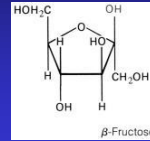
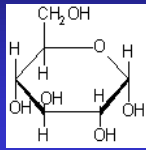
Alimentos in natura

- ✓ Glicose
- ✓ Frutose
- ✓ Sacarose
- ✓ Lactose
- ✓ Amido
- ✓ Gomas
- ✓ Sorbitol
- ✓ Manitol

Ingredientes alimentares

- ✓ Açúcar Cristal, refinado
- ✓ Açúcar demerara, mascavo
- ✓ Xarope de glicose
- ✓ Xarope de frutose (HSF)
- ✓ Açúcar invertido
- ✓ Polióis
- ✓ Açúcar esterificado a AG
- ✓ Gomas
- ✓ Amido

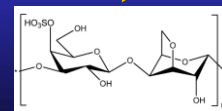
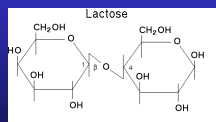
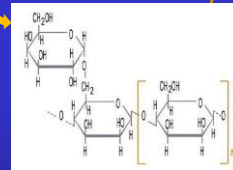
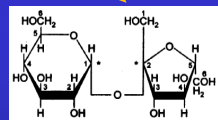
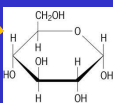
Carboidratos- Fonte



31% Glu
38% Fru
1.3% Sac



Ingredientes: água, açúcar, chocolate, gordura vegetal, leite em pó desnatado, xarope de glicose, cacau em pó, soro de leite, estabilizante, goma guar, goma jataí e carragena, Aromatizante e emulsificante mono e diglicerídeos de ácidos graxos

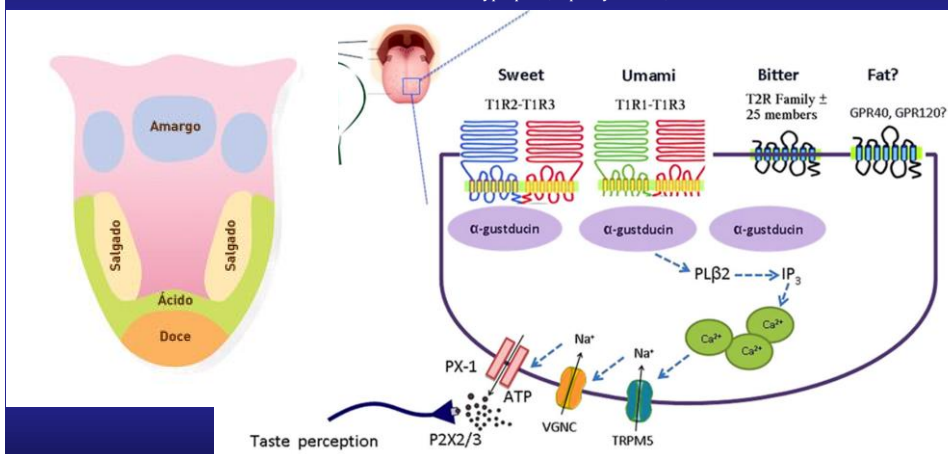


Carboidratos- Doçura (DR)

Açúcar	Doçura relativa	Não açúcar	Doçura relativa
Sacarose	100	Aspartame	18.000
Lactose	16	Esteviosídeo	30.000
Maltose	32	Sacarina	40.000
Glicose	74	Ciclamato	7.000
Frutose	173	Sucralose	6.000
Galactose	32	Alanina	130

Carboidratos- Doçura (DR)

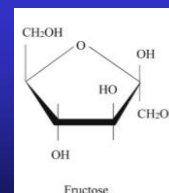
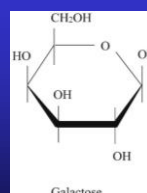
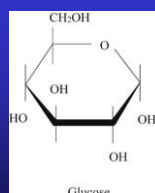
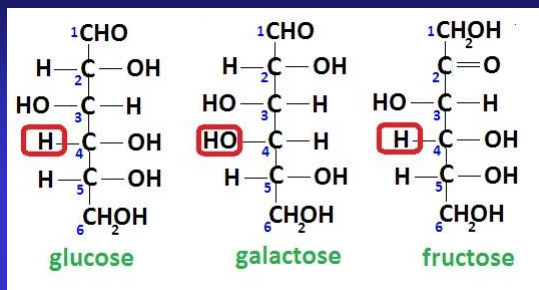
CHO- glucose, fructose, sucrose, maltose
AA- D-tryptophan, D-phenylalanine, D-serine



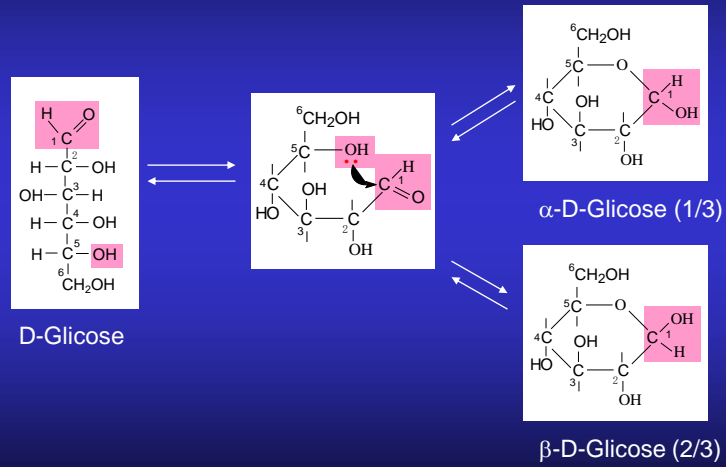
Nutrients 2017, 9, 653; doi:10.3390/nu9070653

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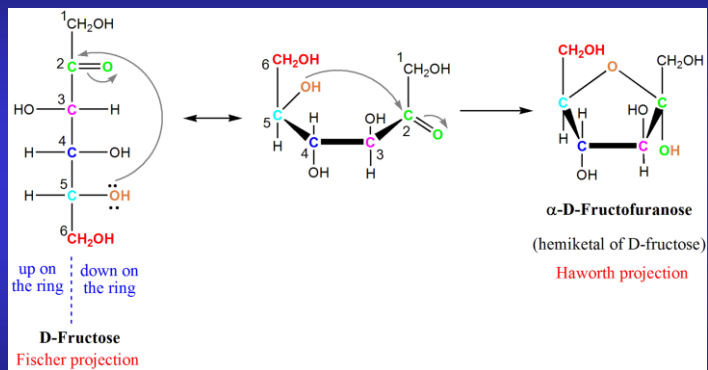
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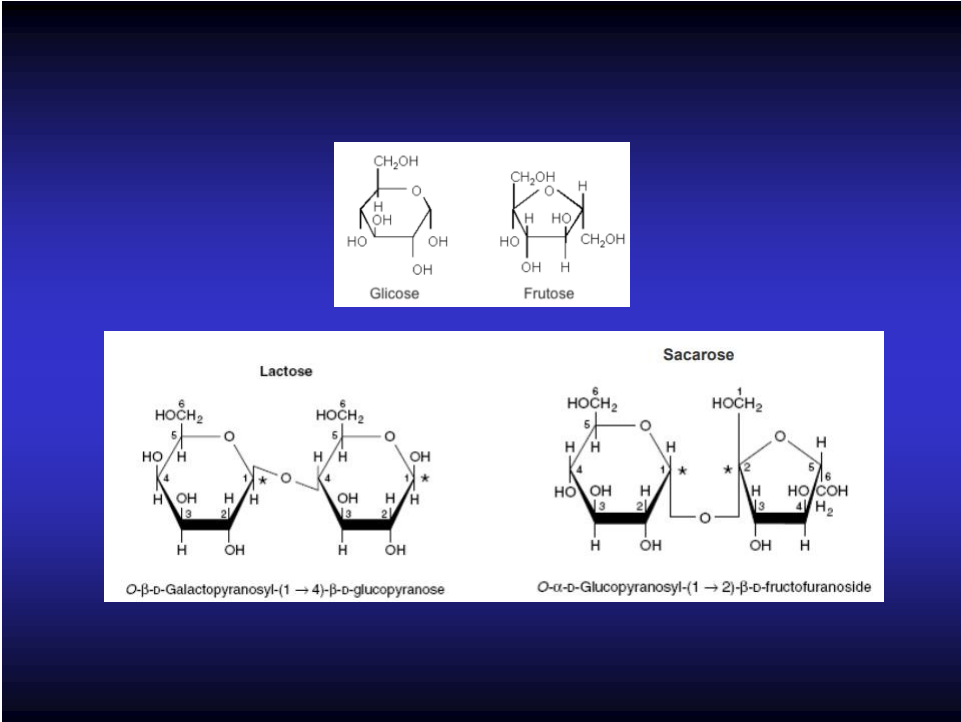


Ciclização-Glicose

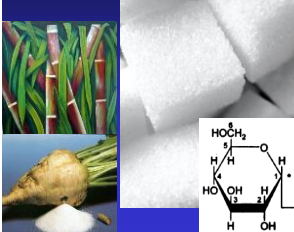


Ciclização-Frutose

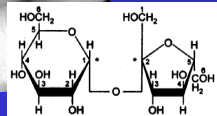


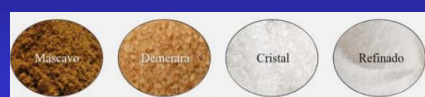


Sacarose- Oligossacarídeos

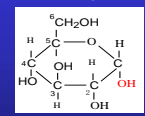


DR 100





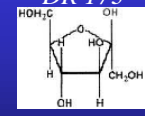
DR 74



α-Glu

*

DR 173



β-Fru

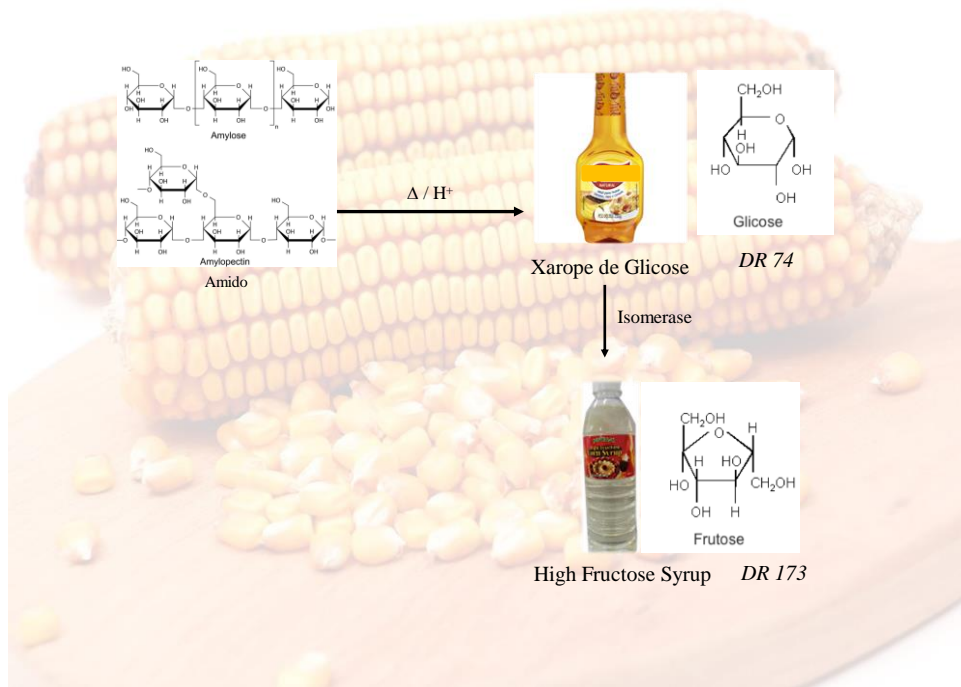
Açúcar invertido

+ 65,50° → (+ 52,5°) + (-92°)

Composição Nutricional	Açúcar Mascavo	Açúcar Demerara	Açúcar Cristal	Açúcar Refinado
Valor Energético (kcal)	396	n.a.	387	387
Carboidratos (%)	94,5	n.a.	99,6	99,5
Umidade (%)	3,3	0,10	0,1	0,1
Proteínas (%)	0,8	n.a.	0,3	0,3
Resíduo mineral fixo (%)	1,4	0,36	Tr.	Tr.
Potássio (mg)	522	n.a.	3	6
Cálcio (mg)	127	n.a.	8	4
Magnésio (mg)	80	n.a.	1	1
Ferro(mg)	8,3	n.a.	0,2	0,1

*Tr.: traços; n.a.: não analisado (Fonte: TACO, 2011; Bettani et al., 2014).

Tabela 1. Composição nutricional do Açúcar Mascavo, Açúcar Demerara, Açúcar Cristal e Açúcar Refinado.



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Cristalização

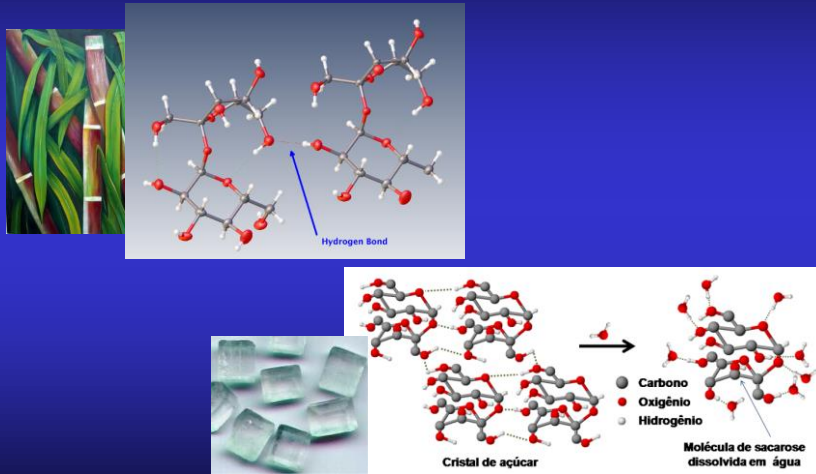


Figura 19. Representação simplificada da dissolução de sacarose em água
<https://www.scielo.br/j/qn/a/9q5g6jWWTM987mDqVFjnSDp/?lang=pt>

Pergunta 1- Cristalização dos monossacarídeos



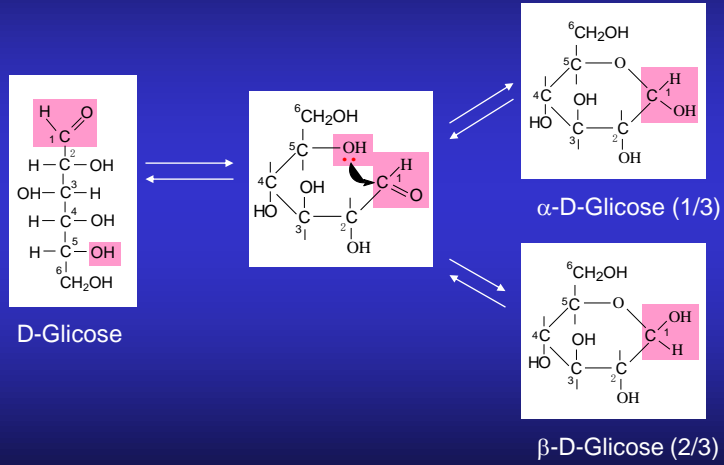
Xarope de Glu



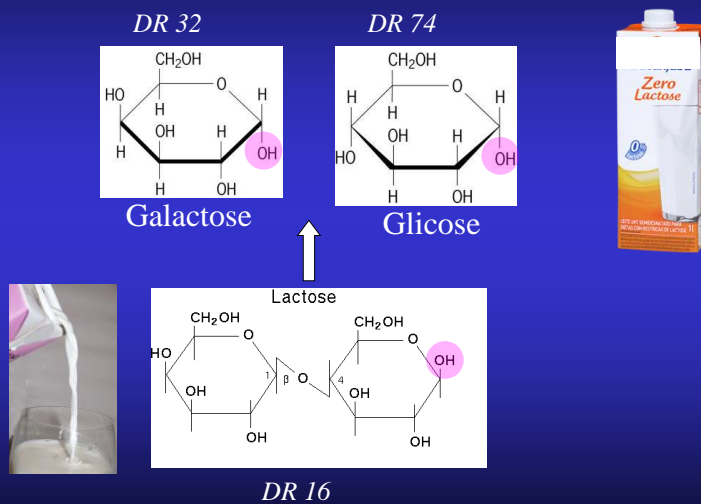
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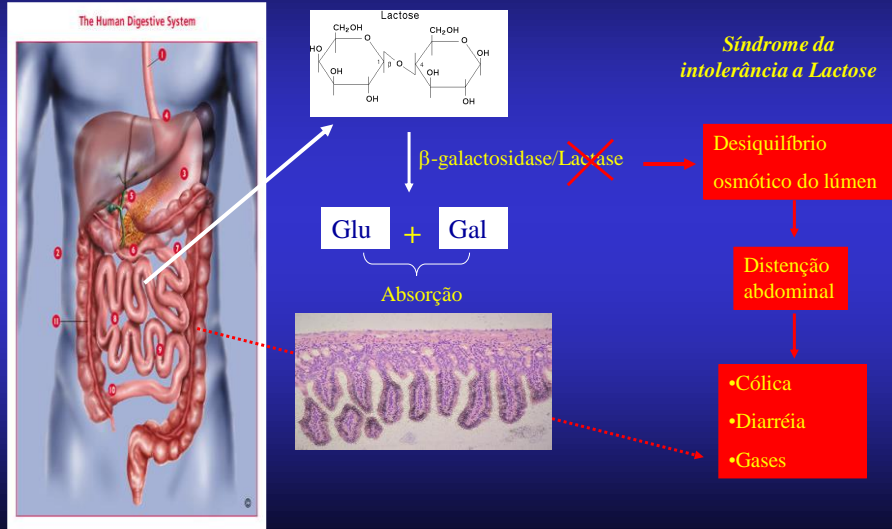
Ciclização-Glicose



Oligossacarídeos- Lactose

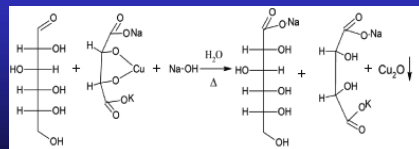
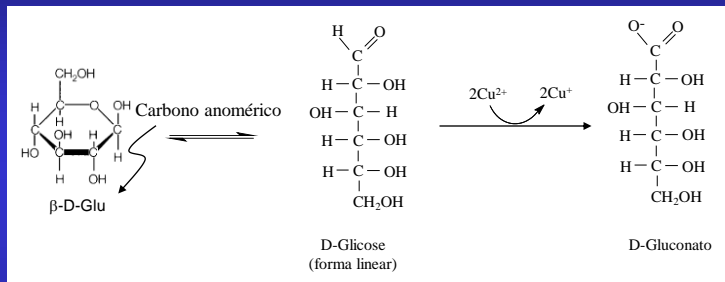


Oligossacarídeos- Lactose



Açúcar redutor

Monossacarídeos são agentes redutores- Reação de Fehling



Pergunta 4

Os oligossacarídeos são redutores?

