

Supplementary Material

Supplementary Table 1. Structural diversity of complex carbohydrates from various biological sources of foods

Sources	Food samples	Carbohydrate examples	References
Higher plants	Cereal crops, legumes, fruits, vegetables, roots, tubers; Isolated mucilage polysaccharides as food gum; maple syrup	Cellulose, β -(1,3;1,4)-glucan, callose, glucomannan, galactomannan, heteroxylan, xyloglucan, arabinoxylan, arabinan, rhamnogalacturonan, arabinogalactan, starch, fructan.	(Anderson and Kieber 2020, Burton and Fincher 2012, Marcotuli et al. 2020, Mirhosseini and Amid 2012, Padayachee et al. 2017, Saffer 2018, Sato et al. 2019)
Fungi	Edible mushrooms	Chitin, β -(1,3)-glucan, β -(1,3;1,6)-glucan, β -(1,6)-glucan, glycogen-like α -glucan, mannoprotein, glucuronoxylomannan.	(Cuskin et al. 2015, Gow et al. 2017, Pandya et al. 2019, Vinogradov et al. 2004, Wu et al. 2019)
Microalgae	Isolated polysaccharide as food gum	Sulfated exopolysaccharides, β -(1,3)-glucan, starch, laminarin,	(Forján et al. 2014, Villarruel-López et al. 2017)
Bacteria	Exopolysaccharide as food gum	Xanthan gum, gellan gum, , alginate, cellulose, curdlan, dextran, hyaluronic acid, levan.	(Osemwegie et al. 2020, Schmid et al. 2015, Wu et al. 2009)
Seaweed	Edible red, brown, and green seaweeds	Alginate, agarose, porphyran, carrageenan, fucoidan, ulvan, cellulose, β -1,3-xylan, β -1,4-xylan, β -(1,3;1,4)-xylan, β -1,4-mannan, xylomannan, furcellaran, laminarin.	(Alba and Kontogiorgos 2019, Becker et al. 2020, Cherry et al. 2019, Hsieh and Harris 2019, Kidgell et al. 2019, Kinnaert et al. 2017, Praveen et al. 2019, Tanna and Mishra 2019, Usov 2011)

Marine crustacean shell	Chitosan produced from chitin in crab and shrimp shell	Chitin, chitosan	(Hamed et al. 2016, Manigandan et al. 2018, Suryawanshi et al. 2019)
Marine animal	Sea cucumber	Sulfated fucan, fucosylated chondroitin sulfates	(Pangestuti and Arifin 2018, Thinh et al. 2018, Ustyuzhanina et al. 2018, Xiong et al. 2020)
Animal (meat)	beef, pork, poultry muscle meat; liver of duck or goose for <i>foie gras</i> production	Glycogen	(Bonfont et al. 2019, Fernandez and Tornberg 1991, Komatsu et al. 2014, Mellor et al. 1958)
Animal secretion	milk, honey, human breast milk	Fructo-oligosaccharides, Galacto-oligosaccharides, human milk oligosaccharides (<i>e.g.</i> 3'-Sialyllactose, Fucosyllactose, and Lacto-N-Neohexaose), other complex oligosaccharides	(Kanyer et al. 2017, Morales et al. 2006, Oliveira et al. 2015)
Complex sources	Complex processed food (<i>e.g.</i> bread, noodles, cola, wine, beer)	Mixture of complex carbohydrates, such as starch and rhamnogalacturonan II	(Doco et al. 2015, Kanyer, Bornhorst, Marco and Bamforth 2017, Saha and Bhattacharya 2010, Sivam et al. 2010)

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