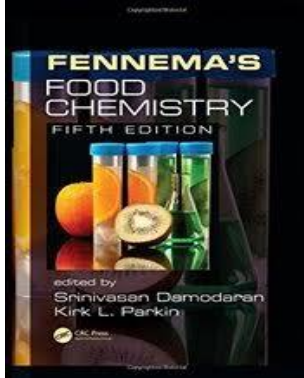


Food Chemistry I

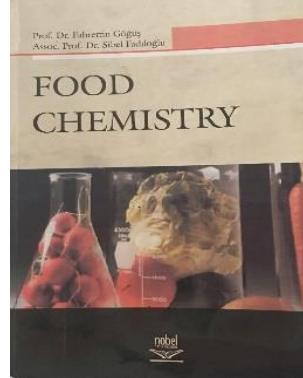


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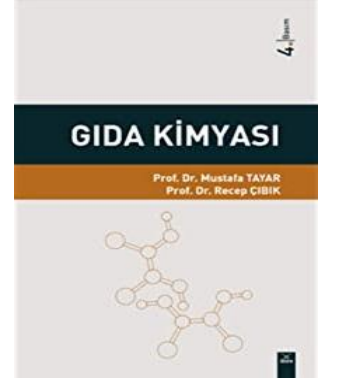
1.



2.



3.



1. Fennema O.R., Ed: Damodaran S. and Parkin K.L. 2017. *Fennema's Food Chemistry*, CRC Press Taylor & Francis Group Boca Raton, FL, USA.
2. Göğüş F. and Fadiloğlu S. 2006. *Food Chemistry*, Nobel Akademik Yayıncılık, Ankara.
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WATER

Functions of Water in Organism

Water functions different ways in organism:

- a) As a building material
- b) As a solvent
- c) As a governor of body temperature
- d) As a lubricant and a plasticizer

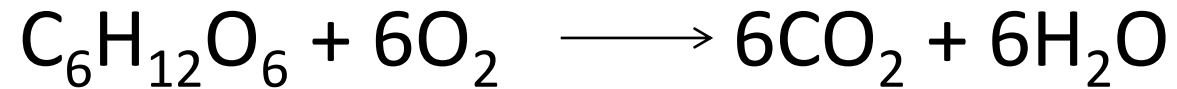
The main sources of water for the body:

The water that the organism needs comes primarily from 3 sources:

- a) From drinks (drinking water and beverages)
- b) From foods
- c) From metabolic water

Metabolic water

Metabolic water formed by oxidation of some hydrogen-containing nutrients also contributes to water intake.



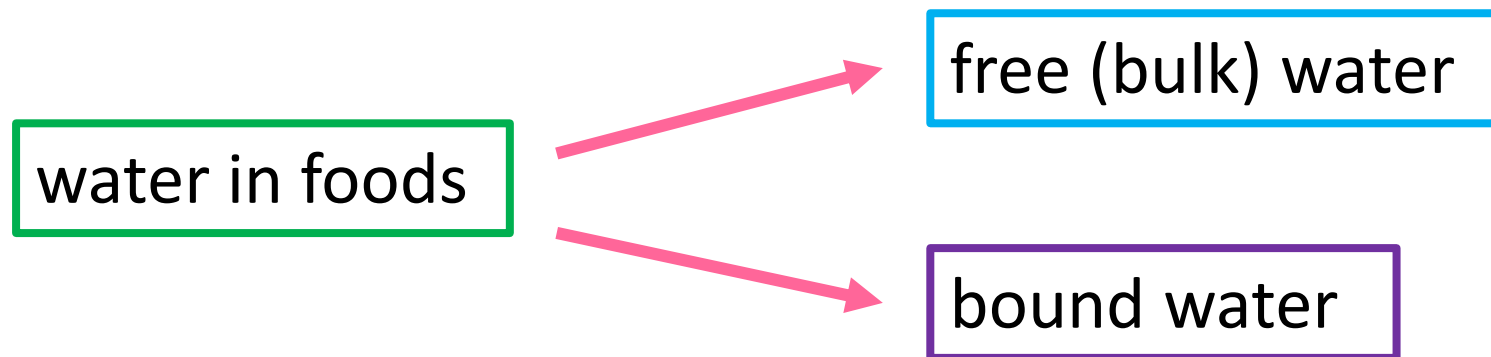
WATER–SOLUTE INTERACTIONS

Since the structure of liquid water is in a dynamic equilibrium between various tetrahedrally hydrogen-bonded clusters, the introduction of a solute into liquid water will invariably cause a shift in the equilibrium structure of water.

Since water is a dipolar molecule, it invariably interacts with almost all dissolved solutes via charge–dipole, dipole–dipole, and dipole–induced-dipole interactions.

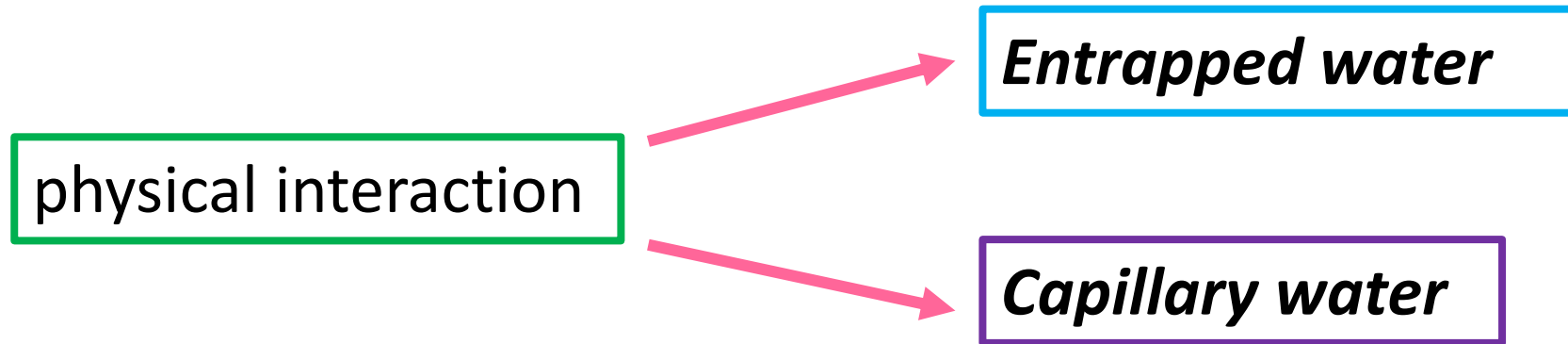
Water in Foods - Types of Water

Foods are composed of proteins, polysaccharides, minerals, pigments, and many other constituents in addition to water. These constituents interact with water and significantly affect the properties and status of water.



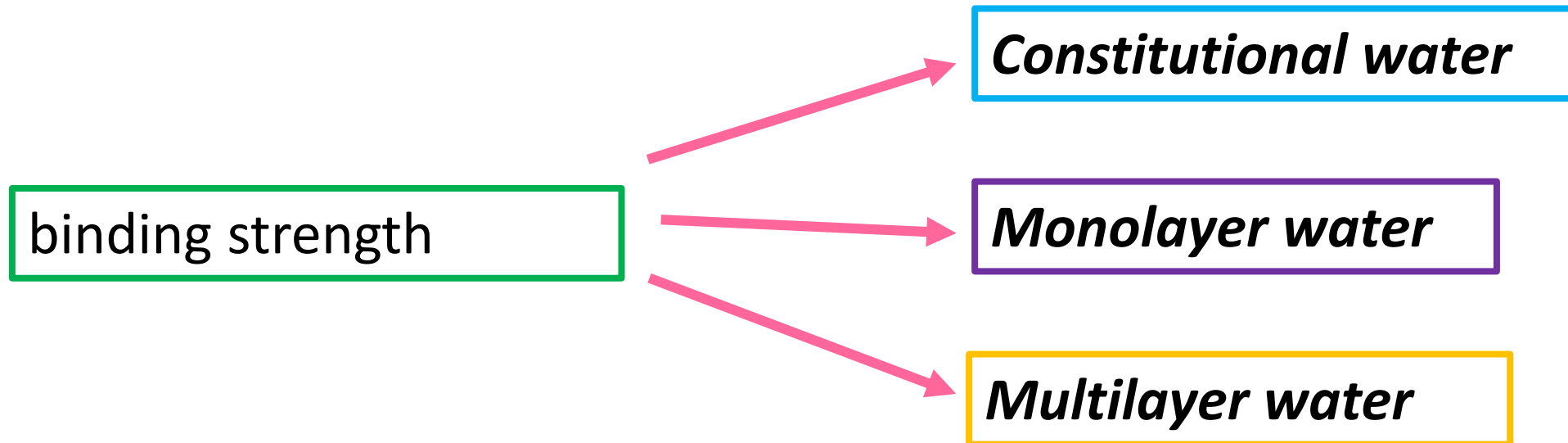
Free (Bulk) Water

Bulk water or free water is not chemically bound to nonaqueous compounds and mainly includes water that is physically entrapped.



Bound Water

Bound water is water that exists in the vicinity of solutes and other nonaqueous constituents and binds to other solutes through covalent bonds and does not freeze at -40 degrees C.



Bound water and free (bulk) water differ in the following:

1. Bound water associates with nonaqueous constituents more tightly and its vapor pressure is much lower than free water.
2. Bound water freezes in much lower temperature than free water.
3. Bound water cannot dissolve solutes.
4. Free water can be utilized by microorganisms, while bound water cannot.