# Extracellular proteins

Usually are proteins calculated at mass units, but our implementation calculate their amount of substance. Because the molar concentration *n* plays the role in osmotic pressure *p* by Eq1, where *R* is gas constant and *T* is temperature.

Recalculation is done to have the same mathematical meaning of colloid pressure as in original model. There is generated average molar mass, which dependents on mass concentration of proteins such as Fig1.



The division of plasmatic proteins into albumins and globulins is simplified with assumption that mass of albumins is 60% of total plasmatic protein mass. Normal concentrations are in table Tab1.

|  |  |  |
| --- | --- | --- |
| Total plasmatic proteins | Albumin | Globulins |
| 70 g/L | 42 g/L | 28 g/L |
| 1.44 mmol/L | 0.63 mmol/L | 0.81 mmol/L |

The model of proteins (Fig2) has four main compartments: blood plasma, upper torso interstitium, middle torso interstitium and lower torso interstitium. Normal concentrations at interstitial compartments are listed in table Tab2. Normal proteins synthesis and degradation of 10 mg/min can be changed with deviation of their colloid pressure or plasmatic concentration. Movement between compartments is caused by capillary membrane concentration gradient or lymph flow from interstitium to blood as implemented in scheme of Fig2. And special changes of plasmatic concentration could be done by intravenous therapy, hemorrhage or pathological states, when proteins enter the peritoneum space or primary urine filtrate.

|  |  |  |
| --- | --- | --- |
| Upper torso interstitium | Middle torso interstitium | Lower torso interstitium |
| 32.8 g/L | 26.3 g/L | 22.4 g/L |
| 0.6 mmol/L | 0.48 mmol/L | 0.4 mmol/L |

