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Methods of proteins fractionation
Theory

Gel filtration

To separate mixture of components which have different sizes of molecules, gels can be used because gels had porous structure thus they work as a strainer. When the mixture is flowing through the gel, smaller molecules penetrate into the gel structure, the deeper, the smaller they are in comparison to the diameter of gel porous. On the other hand, molecules which are bigger than the diameter of gel porous, do not penetrate the gel beads but flow between the beads so they flow through the column with the gel quicker than the smaller ones. The bigger are the differences between the size of the separated molecules the better is the resolution of the mixture. The mentioned resolution of the gel beads is the basis of the separation technique called **gel filtration** (gel chromatography, molecular chromatography). The gel used in this method is called sephadex.

The gel is kind of modified polysaccharide dextran, in which organic chains are cross-linked by additional bridges to give a three-dimensional network. The number of these transverse bridges determinates the size of gel porous in this dextran net. The more bridges, the smaller porous size. Therefore, sephadex is produced in several various sizes of porous, marked as G-10, G-50 and others. The size of gel porous decides on the range of fractionation and resolution of the separated molecules.