A DIGITAL TOOL FOR CASEIN ISOELECTRIC POINT DETERMINATION

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Introduction: Casein is a milk protein that has the same number of positive and negative charges in a pH around 4.7. This characteristic is called the isoelectric point (pI). The pI varies from protein to protein and it depends on the charges of the lateral chain of the constituent aminoacids. At this pH value the protein has its minimum solubility since the net charge is zero and the repulsion between molecules is decreased. Furthermore, the electrostatic interaction occurs between the protein molecules. Thus, they form clumps which tend to precipitate. On the other hand, when they are placed in a solution whose pH is above or below of its pI, the protein molecules have respectively a negative or positive net charge, with strong repulsion between themselves and great interaction with the solvent (water).

Objective: This learning object presents a simulation of a laboratory practice for the determination of casein isoelectric point. **Materials and Methods:** Cartoons were planned in order to show the methodology procedures and biochemical fundamentals. Animations were developed with the aid of the Adobe® Flash 8 software associated with logic programming.

Results: The simulation consists of six steps that reproduce the activities performed in the laboratory. Among them, the user can observe different degrees of turbidity and / or precipitation of casein in solutions with different pH values, he can measure these values with paper indicator strips and then determine the pI of this protein.

Conclusions: This learning object was tested by students of Biochemistry I, Pharmacy course since 2012/2. The navigation features, design, interaction, interactivity were considered excellent by 80% of students indicating that this object can be used as an interesting tool to assist the teaching and learning of basic biochemistry. Support: SEAD-UFRGS. Available at:

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