PME from, for example, oranges desterifies pectin blockwise, while chemical methods such as alkaline or acid treatment result in a pectin with a random distribution of the acid groups. In general, pectin esterases of fungal origin are believed to deesterify randomly as well. The distribution of the methyl groups is of importance for the functionality of the pectin product.

With the aim of characterizing the mode of action of the cloned fungal pectin esterase the distribution of the acid groups has been determined by a method described by Mort *et al.* (1993). The esterified galacturonic acids are converted to galactose by reduction with sodium borohydride. Subsequently the glycosidic linkages of the resulting galactose residues are cleaved selectively by HF solvolysis. This leads to the production of oligomers: $(Gal\ A)_n$-Gal. These oligomers represent the contiguous stretches of Gal A residues between methyl-esterified residues in the pectin. The cloned esterase was compared to an orange esterase and to alkaline treatment. By high-performance anion exchange chromatography oligomers of six galacturonic acid residues were separated and quantified. From the distribution of these oligomers it can be determined whether the acid groups in the pectin are randomly or blockwise distributed.

In conclusion it was seen that the pattern of the desterification performed by the cloned pectin esterase resembles that of an alkaline treatment. Minor differences indicate, however, that the esterification performed by the cloned enzyme is not completely random.

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EFFECT OF SUCROSE ON THERMODYNAMIC INCOMPATIBILITY OF DIFFERENT BIOPOLYMERS IN THE AQUEOUS MEDIUM

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Thermodynamic incompatibility is one of the most commonly encountered phenomenon in mixed biopolymer solutions. This phenomenon can be a controlling factor for the structure and physico-chemical properties of foods. The nature and degree of thermodynamic incompatibility depends on the interactions between all the components in the solution. By altering its composition of the aqueous medium by adding different low molecular weight substances it is possible to significantly influence the thermodynamic compatibility of the biopolymers.

Sucrose is second in importance after NaCl as a food taste additive. The necessity for studying the influence of sucrose on the thermodynamic incompatibility of biopolymers follows from the fact that sucrose is a major component of a wide variety of food. In this connection we have attempted to study the influence of sucrose on the thermodynamic incompatibility of a number of biopolymers in aqueous solutions. Three pairs of the biopolymers were chosen as the objects of our investigations, namely, sodium caseinate – ovalbumin, 11S globulin vicia faba – ovalbumin, sodium caseinate – sodium alginate.

The co-solubility of the biopolymers was investigated at different sucrose concentrations in the solution (in the range of 0 to 50% w/v). A big increase in the co-solubility of the biopolymers studied was observed as the sucrose concentration increases in the aqueous medium. It was established that the increase in co-solubility of the biopolymers occurs in accordance with an increase in the protein solubility in the aqueous medium upon sucrose addition. So it is possible to suppose that the same reason provides the basis for both an increase in co-solubility of the biopolymers and solubility of the proteins in the aqueous medium. The thermodynamic parameters of the different types of pair interactions (the second virial coefficients) were estimated using light scattering data in the binary and ternary aqueous solutions of the biopolymers without sucrose and upon addition of 25% w/v of sucrose.

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HEAT-INDUCED GELATION OF GLOBULAR PROTEIN MIXTURES

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It is now accepted that globular proteins form heat set gels under appropriate conditions of protein concentration, pH and salt. Although rheological studies on heat-induced gelation of globular proteins have been performed by several workers, there are only a few studies of the gelation kinetics. Protein gelation induced by heating is largely an irreversible process, so it is essential to understand the kinetics of the gelation. The mixed system of such globular proteins has been investigated for application particularly in the food industry. However, the gelation behaviour is not yet clarified because of the complexity of proteins. In this poster we will discuss the kinetics of heat-induced gelation of two globular protein mixtures on the basis of the gelation time for different temperatures.

The rheological measurement was performed with the Controlled Stress Rheometer CS100 (Carri-Med Co, UK) using cone-plate geometry. Bovine serum albumin (BSA) and b-Lactoglobulin (β-Lg) was mixed for different concentration ratio (10:0 to 0:10 in weight %) and dissolved in deionised water, followed by pH adjustment to 6·6. The strain and frequency were set at 1% and 1 rad/s, respectively. The storage modulus G′ and the loss modulus G″ were monitored as a function of time. The measurement was performed at different temperatures and the gelation time was defined as the time when G′ showed rapid increase because use of the so-called Winter criterion for gelation was impossible due to lack of signal. The gelation time became longer at lower temperatures. At different concentration ratios it was found that the gelation time changes drastically with the ratio of BSA/β-Lg although the change does not seem to be linear against the ratio. The results enable further insight into the co-gelation of mixed globular proteins to be developed.