

BRIEF COMMUNICATIONS

THE GELLING PROPERTIES OF ZOSTERIN AND ITS FRAGMENTS

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The gelling properties of zosterin – a seaweed pectin – and its fragments – an apiogalacturonan and a galacturonan [1] – have been studied by the light-scattering and viscosimetric methods. At the beginning of the intensive gelling process, the asymmetry of the scattering of the light falls, making it possible to follow the tendency to gelling of individual compounds.

In the presence of acids, zosterin (1-2% aqueous solutions) gives a dense and stable gel at a pH of 2.0 at 20°C for 24 h; the apiogalacturonan (2% aqueous solution) forms a considerably less stable gel at an optimum pH of 3.0 in 40 h; galacturonan does not gel at any pH value; on the addition of acid a flocculent precipitate is formed. The addition of sucrose (up to a 25% concentration of it in the solution) shortens the gelling time of zosterin and the apiogalacturonan to 6 h and has no effect on the behavior of the galacturonan in the acidification process.

Thus, the more complex the neutral fraction of the pectin molecule, the more clearly is its tendency to gel formation in the presence of acid and sucrose shown. This may be connected with the influence of the branched reticular structure of the molecule on the gelling process. Furthermore, a fundamental role is played by the size of the particles of the given compounds in solutions: as has been shown previously [2], gelling capacity is possessed only by pectin substances with a particle size greater than 2000 Å. In our case, in solution zosterin has particles with a radius of 3000 Å, while the dimensions of the particles of galacturonan are about 2000 Å [3] and fall with the addition of acid.

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