

## 7th Bratislava Symposium on Saccharides, Smolenice, August 29—September 2, 1994

The traditional international scientific event devoted to chemistry and biochemistry of carbohydrates, organized in two-year intervals by the Institute of Chemistry, Slovak Academy of Sciences, took place again in the Smolenice Castle. The meeting was attended by 70 participants, of which 35 were from abroad from 13 countries. This time the meeting was concentrated on the conformation and biological activities of polysaccharides and oligosaccharides. The scientific programme consisted of 24 plenary lectures and about 50 posters. The organizers succeeded to bring to the meeting several internationally recognized authorities from specific fields. The introductory series of lectures covered structure, conformation, and biological activities of glycoproteins and polysaccharides. *J. P. Kamerling* (The Netherlands), *S. W. Homans* (UK), and *A. Savage* (Ireland) outlined current strategies of the determination of structures of carbohydrate moieties in glycoconjugates and polysaccharides. The greatest progress was achieved particularly in the methods of nuclear magnetic resonance. *E. R. Morris* (UK), *M. Hricovíni* (Slovakia, Institute of Chemistry), *M. Rinaudo* and *J.-F. Thibault* (both France), and *A. Malovíková* (Slovakia, Institute of Chemistry) analyzed the relation between structure, conformation and rheological properties of acidic polysaccharides, their behaviour in solution depending on counterions. The lectures also treated the theoretical principles of the gel formation, knowledge of which is important for the practical applications of these polymers.

As the Symposium programme progressed, the lectures on structural aspects were continuously replaced by those which covered biochemical and physiological aspects of carbohydrates. *W. Tanner* (Germany) surveyed current status of research of the function of protein glycosylation in eukaryotic microorganisms. The molecular biology approaches, that allow elimination of genes responsible for the glycosylation, threw new light on this area. It has been clearly established that glycosylation of proteins is vital for the cells, and all mutations preventing glycosylation appear to be lethal. Complex regulation of the processes of biosynthesis of polysaccharides and glycoproteins was the subject of plenary lectures of *E. Cabib* (USA), *G. Palamarczyk* (Poland), and *V. Farkaš* (Slovakia, Institute of Chemistry).

Several oral presentations (*Y. Masuda*, Japan; *T. Hayashi*, Japan; *H. U. Seitz*, Germany; *J. S. G. Reid*, UK) were devoted to biological function of xyloglucan

and its fragments in plant cells. This is a new, hot area of plant biochemistry, which was mobilized by original findings from American laboratories that xyloglucan oligosaccharides play the role of plant hormones. The most attractive lecture of this series was presented by *J. S. G. Reid*. The function of enzymes modifying xyloglucan was investigated using DNA recombination techniques. A system resulting in the decrease or increase in the expression of particular hydrolases allows an interesting correlation with the structure of the polysaccharide and the overall properties of plant tissues.

A highlight of the plenary programme was the lecture of *G. B. Fincher* (Australia). He presented three-dimensional structures of two barley  $\beta$ -glucanases, one cleaving  $\beta$ -1,3-glucans in fungal cell walls (defending enzyme) and the other  $\beta$ -1,4-linkages in its own  $\beta$ -1,3- $\beta$ -1,4-glucan. The structures are almost identical with the exception of the organization of the substrate binding sites. The small differences create a possibility to transform one enzyme into the other using protein engineering. Other two lectures (*P. Biely*, Slovakia, Institute of Chemistry; *G. L. Côté*, USA) were devoted to a new type of  $\alpha$ -glucanase hydrolyzing an  $\alpha$ -1,3- $\alpha$ -1,6-glucan under the formation of a new cyclic tetrasaccharide. *J. D. Anderson* (USA) called attention to the role of xylanases and xylan fragments in plant defence mechanisms.

The final portion of the plenary programme (*S. Szu*, USA; *R. Toman*, Slovakia, Institute of Virology; *M. Guerrini*, Italy; *J. Šandula*, Slovakia, Institute of Chemistry) was devoted to the structure/function relationship of bacterial and yeast polysaccharides and their immunochemical properties. The presentations demonstrated the importance of structural investigations of surface structures of pathogenic microorganisms for the development of natural or artificial vaccines.

The 7th Bratislava Symposium on Saccharides coincided with the 40th anniversary of the foundation of the Institute of Chemistry. This fact considerably enhanced the festivity of the meeting and contributed to its great success. The Symposium was sponsored with Ciba-Geigy, Ltd., Eastman Chemical Europe, Middle-East and Africa, Ltd., US Army Research, Development and Standardization Group, Knauer Scientific Instruments, Pasteur-Mérieux Serum et Vaccins, and Tatratour.

*P. Biely*