

LETTER TO THE EDITOR

## First Cuban Symposium on Carbohydrates as Vaccines, Diagnostics and Therapeutics

*Havana, Cuba 25–26 November 1994*

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The first Cuban Symposium on Carbohydrates as Vaccines, Diagnostics and Therapeutics was held at the Finlay Institute for Vaccines and Sera in Havana, Cuba, on November 25 and 26, 1994. The Congress was divided into four sections: A, Vaccines; B, Diagnostics; C, Search for new therapeutics and D, Tools for the study of carbohydrates. The programme contained eight plenary lectures and 45 posters.

Section A, Vaccines, was the largest (four lectures and 14 posters) and covered the main research directions in this area in Cuba. Dr Gustavo Sierra (Finlay Institute, Cuba) talked about "An effective Proteoliposome-based Vaccine Against *Neisseria meningitidis* Groups B-C". Since the development of this polysaccharide C-outer membrane protein complex vaccine, more than a million doses have been administered. Synthetic oligosaccharides as elements for vaccine development were discussed by Dr J.P. Kamerling (Bijvoet Center, Bio-Organic Chemistry Department, Utrecht University, The Netherlands) on the synthesis of elements of capsular polysaccharides of *Streptococcus pneumoniae* serotypes and by Dr Vicente Verez (Synthetic Antigen Lab., Havana University, Cuba) on the synthesis of *Haemophilus influenzae* type b oligosaccharides and their uses in a multivalent antimeningococcal vaccine. Dr Rene Roy (Department of Chemistry, University of Ottawa, Canada) talked about the synthesis of glycopolymer conjugates for immunochemical studies. The posters on this section emphasized the main research topics currently under development in Cuba in the field of vaccines: Antimeningococcal B-C proteoliposome, synthesis of *Haemophilus influenzae* type b determinants, *Vibrio cholerae* and Sialyl-Tn oligosaccharides and their use for vaccine development. Tumour ganglioside isolation and characterization were also discussed.

Section B, Diagnostics, had only poster presentations. The main topics were the synthesis of human blood

group and tumour associated oligosaccharides and their use for monoclonal antibody preparation for diagnostic purposes.

Section C, Search for new therapeutics. Two lectures were given on the analysis of glycoprotein glycosylation patterns: "Modern strategies for the structural studies of glycoproteins" was presented by Dr J.P. Kamerling and Dr Jose A. Cremata (Center for Genetic Engineering and Biotechnology, Havana, Cuba) talked on "Heterologous proteins expressed in the methylotrophic yeast *Pichia pastoris*". A lecture on "Monosialoganglioside GM3 and derivatives as targets for cancer immunotherapy" was presented by Dr L.E. Fernandez (Center for Molecular Immunology, Havana, Cuba) and Dr R. Roy closed this section with a discussion on the design of new glycoforms as potential anti-influenza inhibitors. Posters from Section C dealt with the development of carbohydrate derivatives with potential usefulness as drugs, e.g. natural polysaccharides from seaweed or yeast and some sucrose ester derivatives.

In Section D, Tools for the study of carbohydrates, the posters included new synthetic or analytical methods as well as theoretical modelling of biologically relevant carbohydrates.

Cuban Carbohydrate Chemistry and Biochemistry has at present two main branches: pharmaceuticals and the sugar industry. The first of these is now mainly represented by four institutions: at the Faculty of Chemistry of Havana University, the Laboratory of Synthetic Antigens works on the synthesis of oligosaccharides, the development of new spacers, monoclonal anticarbohydrate antibodies and new vaccines. The Finlay Institute is the main vaccine manufacturer in Cuba. They produced the first commercially available antimeningococcal B-C vaccine and carry out research on the development of new vaccines. The Center for Genetic Engineering and Biotechnology developed new analytical methods for the

study of the glycosylation patterns of glycoproteins and of the mechanisms whereby the glycosylation patterns of different hosts might influence the biological activity of recombinant glycoproteins. The Center for Molecular Immunology produces monoclonal antibodies on a large scale and studies gangliosides as a target for cancer immunotherapy. This symposium has established the

basis for an International Bi-Annual Meeting on the above topics.

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