Cuban Medical Literature: Abstracts

**Vax-TyVi: Salmonella typhi Vi Polysaccharide Cuban Vaccine**

Luis Riverón Martínez, Daniel Cardoso et al

The vaccine of whole cells inactivated by heat and phenol that has been used in Cuba since 1983 is highly reactogenic and has shown little epidemiological impact. A technology was developed to substitute this vaccine for a Vi Polysaccharide of new generation, competitive with those existing in the international market. The technology developed is characterized by a new medium that maximizes the yield of polysaccharide and its purification method, which form part of the practical knowledge of the proposed technology. The process at laboratory scale was characterized as well as the quality of the Vi Polysaccharide obtained and it was developed to production scale. The Vi Polysaccharide obtained at production scale as well as the final vaccine were studied both at the Finlay Institute and in collaboration with the National Institute for Biological Standards and Control of Great Britain, where it was demonstrated that it was similar to the reference. For the quantification of the Vi Polysaccharide it was set up, standardized and validated an inhibition ELISA system, not reported for these purposes. A new generation vaccine was obtained adequate for its use in Cuba and its commercialization and the bases were set for a new generation of antidiarrheic combined vaccines. The product was assayed in a homologation clinical study and it did not show differences with the one of the Aventis Pasteur company. With these results, the approval was obtained from the Sanitary Medical Register. A total of 900,000 doses have been produced which are being distributed throughout the national vaccination network.

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**A Synthetic Conjugate Polysaccharide Vaccine Against Haemophilus influenzae Type b**


Glycoconjugate vaccines provide effective prophylaxis against bacterial infections. To date, however, no commercial vaccine has been available in which the key carbohydrate antigens are produced synthetically. We describe the large-scale synthesis, pharmaceutical development and clinical evaluation of a conjugate vaccine composed of a synthetic capsular polysaccharide antigen of Haemophilus influenzae type b (Hib). The vaccine was evaluated in clinical trials in Cuba and showed long-term protective antibody titers that compared favorably to licensed products prepared with the Hib polysaccharide extracted from bacteria. This demonstrates that access to synthetic complex carbohydrate-based vaccines is feasible and provides a
Induced immunogenicity by means of the VA-MENGOC-BC® anti-meningococcal vaccine against the ATCC C11 N. Meningitides strain in adolescents 12 years after vaccination

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SUMMARY

The antibodies’ response induced by the VA-MENGOC-BC® Cuban antimeningococcal vaccine against the ATCC C11 strain was studied by Bactericidal Serum Trial and ELISA among 184 adolescents at a Polytechnical School in Ciego de Ávila, that had been immunized in mass campaigns 12 years before. Blood samples were taken before administering the first dose (T0), 4 weeks later (T1), and 4 weeks after the second dose (T2). Twelve years after ≥ 1:8 vaccination, 25% of the adolescents presented bactericidal titers against the evaluated strain. Seventy eight percent showed a concentration of antibodies over the limit of detection against the meningococcus C capsular polysaccharide. The percentages of seroconversion after the first dose were 59 by Bactericidal Serum Trial and 82 by ELISA. There were no significant differences (p > 0.05) between the results obtained after the first and second dose by both trials. The reimmunization with 2 doses of the vaccine did not cause hyporesponse against the ATCC C11 strain in this age group.

Key Words: Immunologic Tests; Meningitis; Meningococcal; Neisseria Meningitidis/Isolation & Purification; Enzyme-Linked Immunosorbent Assay; Immunologic Memory; Vaccines/Immunology

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Hepatitis B Surface Antigen Immunopurification Using a Plant-Derived Specific Antibody Produced in Large Scale

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This paper provides an evaluation of a plant-derived HBsAg-specific antibody in the immunopurification of the recombinant HBsAg for vaccine purposes. This plant-derived antibody was obtained from different batches of 100–200 kg of tobacco leaves and coupled to Sepharose CL-4B with high efficiency. The plant-derived antibody immunoaffinity matrix purification behavior (elution capacity, antigen purity, purification cycles, and ligand leakage) was comparable to that of its mouse-derived monoclonal antibody homolog. This result supports the feasibility of using this plant-derived antibody for the immunopurification of the Hepatitis B surface antigen for human use, opening a new possibility to overcome the constrain of monoclonal antibody production in mice.

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Key words: Plant-derived antibody; Monoclonal antibody; Transgenic plant; Hepatitis B virus surface antigen; Immunoaffinity

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Infection with Vaccine Poliovirus in Children with Homologous Neutralizing Antibodies Induced by T-OPV Vaccinations

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SUMMARY

An investigation on seroconversion and circulation of the viruses excreted from the oral polio vaccine (OPV) was made for some years and its results were introduced into the improvement of the program for eradicating this disease. A retrospective analysis of the data showed new results that are still in effect in the context of the program for the world eradication of polio. Ninety eight children under 2 were administered 2 doses of trivalent oral polio vaccine (T-OPV) with an interval of 4 weeks. Stool samples were obtained weekly from the first dose to 4 weeks after the second dose. Serum samples were taken before vaccination
and 4 weeks later. The percentage of isolation of homologous poliovirus in children with no previous antibodies is higher (116.7 %) than the one attained in children with previous antibodies (34.2 %). The percentages of total isolations from poliovirus in children with seroconversion (72.4 %) is higher than those registered in children with booster (167 %). The cases without isolations in seroconversions with previous heterologous antibodies plus the boosters without anamnestic reaction, or homologous isolations, allowed to infer a self limited silent circulation. The interference to the polioviruses by the non-polio enteroviruses, together with the increase of antibodies by the campaigns, meant that the circulations of poliovirus were self limited shortly after concluding the mass campaign.

**Key Words**: Poliomyelitis/Immunology; Poliomyelitis/Prevention & Control; Mass Immunization; Polio Virus Vaccine, Oral; Poliovirus Vaccines; Infant

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**Validation of Colorimetric Assay to Detect Complement-Mediated Antibody-Dependent Bactericidal Activity Against Serogroups B and C Neisseria meningitidis**

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Colorimetric serum bactericidal assay (cSBA), based on the addition of glucose and a pH indicator to the culture medium after the bactericidal reaction, was validated. The precision measured as repeatability, intermediated precision, and reproducibility was determined as a percentage in titer coincidence between replicas ≥50. Moreover, the use of the freeze-dried complement was evaluated in comparison to the traditionally stored by freezing. The results were the following: precision: titer +1 two-fold dilution (except for the highly positive serum against serogroup B, where there was titer ±2 dilutions); percentage in titer coincidence: ≥50. The known titer or ±1 two-fold dilution was found in the sera titrated with the complement either frozen or freeze-dried. Concluding, cSBA showed to be highly precise, allowing also the use of freeze-dried complement which is another important advantage for this kind of assay.

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**Keywords**: Bactericidal activity; Neisseria meningitidis; Validation

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