Development of autogenous vaccine for effective control of Infectious coryza in chicken

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Preliminary results of the population-based surveillance showed a high incidence rate of CAP, particularly in elderly subjects. Based on this data a pilot vaccination program with PCV13 was implemented by the National and Provincial Ministry of Health offering PCV13 to subjects 65 years and older in Roca City. During a two years period 39% of subjects 65 years and older received PCV13.

The aim of this analysis is to assess effectiveness of vaccination program to prevent all cause CAP in subjects 65 years and older.

Methods & Materials: Cohort study assessed vaccine effectiveness in preventing CAP among adults [3] 65 years and older. Data were gathered from the population-based surveillance database paired with national immunization registry during 2014-2016. Vaccine effectiveness was calculated (1 - (Incidence [vaccinated] ÷ Incidence [unvaccinated]). Multivariable logistic regression was performed, adjusted odds ratios (OR) were computed to obtain vaccine effectiveness (1-OR). We adjusted vaccine effectiveness for influenza vaccination status, age, chronic obstructive pulmonary (COPD), cardiovascular disease, diabetes and nephropathic diseases.

Results: During the study period 3640 adults 65 years and older were vaccinated and 34 (0.93%) suffered CAP. In 5672 unvaccinated adults 65 years and older, 467 (8.23%) suffered the same event. Vaccine effectiveness was 90.0% (CI 95%: 85.0%-93.0%), $p < 0.01$.

Adjusted vaccine effectiveness for influenza vaccination status, age, COPD, cardiovascular disease, diabetes and nephropathic diseases was 62.0% (CI 95%: 40.0-75.0), $p < 0.01$.

Conclusion: Our results show a 62% effectiveness to prevent all cause CAP in adults 65 years and older. Studies of effectiveness are relevant to determine the role of PCV13 to prevent CAP in adults.

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UMP. 724

In silico prediction and analysis of CTL epitopes of Chikungunya virus proteins for vaccine candidate against Chikungunya Virus

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Background: Chikungunya is becoming a major public health concern with many people being affected by it year after year. Chikungunya virus (CHIKV) is a re-emerging mosquito-borne pathogen that was first isolated both both humans and mosquitoes in Tanzania in 1952.In the recent years CHIKV has caused several epidemics in South Africa, India, Philippines, Thailand, Cambodia, Vietnam, Myanmar and Srilanka beyond these regions, infecting millions of people and it is fast re-emerging as an important agent of public health importance. Currently, there are no specific prophylactics or therapeutics for CHIKV though first vaccine development proposed five decades ago. In present study, T cell specific epitopes have been used as vaccine candidates to generate desired immune responses against Chikungunya virus.

Methods & Materials: The Non-structural Polyprotein and Structural Polyprotein sequences of CHIKV prototype strain were obtained from NCBI GenBank and used as an input for various bio-
172 informatics tools for epitope prediction, conservation analysis, molecular docking and CD8 174+mediated immunogenicity prediction. MHC alleles were calculated using the population coverage analysis tool of IEDB

Results: Total of 67 epitopes were identified, which revealed a comprehensive binding affinity to the different human leukocyte antigen class I supertypes: HLA-2A (HLA-A0201, A0202, A0203, A0205, A0206, A0207, A6802), HLA-A3 (HLA-A0302, A1101, A3101, 196 A3301, A6801, A6601), HLA-A24 (HLA-A2402, B3801), 197 HLA-B7 (HLA-B0702, B3501, B5101, B5102, B5301, 198 B5401) and HLA-B15 (HLA-A0101, B1501, B1502) and which had no homologs in humans. Both of the human leukocyte antigen binding specificity and population coverage, Five promiscuous epitopes located in Capsid 1 Protein VLLPNVHTL and MTPERVTRL, MVLAILAFL, FLTLFVNTL and RLKGVSYSL were found to have highest predictable CTL immunogenicity were shortlisted. Identified MHC-I restricted epitopes that may help in the advancement of MHC-I restricted epitope based anti-CHIKV immune responses against this infection and usefullness towards the development of epitope based vaccine development.

Conclusion: All these results recommended the possibility of a combined epitope vaccine strategy and can therefore be further investigated for their immunological relevance and providing a rationale for vaccine design against chikungunya. Further experiment will be explore their immunotherapy relevance and usefulness as vaccine candidates.

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UMP. 725

Development of autogenous vaccine for effective control of Infectious coryza in chicken

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Background: Infectious coryza is the disease of upper respiratory tract in chickens caused by *Avibacterium paragallinarum.* The disease is distributed worldwide with significant economic importance. In India, infectious coryza is considered as re-emerging disease due to frequent outbreaks in recent time in spite of vaccination. The present investigation was designed to develop and assess the efficacy of indigenous coryza vaccine with commercial vaccines.

Methods & Materials: The sero-surveillance of *Avibacterium paragallinarum* from different geographical regions of

India was carried by using techniques like PCR, multiplex PCR and HA-HI assay. The vaccine strains were screened by studying the virulence pattern and disease causing ability of 15 field variants of *Avibacterium paragallinarum.* 16S rRNA sequencing was implemented to check genetic variability in Indian field strains and standard vaccine strains of *Avibacterium paragallinarum.* The unique trivalent W:O vaccine emulsion was prepared by using most virulent and immunogenic local field isolates of *Avibacterium paragallinarum.* Challenge – Protection study of autogenous vaccine and commercial vaccines was carried out in chickens by immunization and subsequent challenge by homologous and heterologous *Avibacterium paragallinarum* strains.

Results: The recovery rate of field isolates of *Avibacterium paragallinarum* from already vaccinated bird was very high (76.4%). This clearly indicates failure of commercial vaccines on field. Along with this all field isolates showed high virulence scores and immense

ability to cause disease. Field isolates were found to be substantially variable in genetic makeup from standard vaccine strains.

At the end of evaluation study, the results revealed that indigenous coryza vaccine is the best preventive measure against both homologous and heterologous challenges. On the contrary, commercial vaccines provided good protection against homologous challenge but showed underdog performance against heterologous challenge.

Conclusion: The autogenous coryza vaccine would be a novel preventive measure against infectious coryza over other conventional treatments in India. The autogenous vaccine strains used in this report are proved to be highly pathogenic and immunogenic in nature. Inclusion of these *Avibacterium paragallinarum* strains in commercial vaccine development may facilitate to tackle Infectious coryza worldwide.

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UMP. 726

Whole cell pertussis vaccine expressing the Pneumococcal Surface protein A as an approach for a double vaccine

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Background: *Streptococcus pneumoniae* (pneumococcus) is an important agent of respiratory infections that causes the death of around 400 thousand children per year, in the world. Pneumococcal Surface protein A (PspA) is a good candidate for the composition of protein vaccines, since it confers protection in animal models of infection, representing an alternative to conjugate vaccines. In previous studies, we have shown that the whole cell pertussis vaccine (wP produced at Instituto Butantan, Brazil, has adjuvant activity when combined to PspA, inducing high levels of antibodies and protection against pneumococcal infection in BALB/c mice.

Methods & Materials: In this work we have constructed a *Bordetella pertussis* strain, derived from the vaccinal strain from Instituto Butantan. The pspA4 gene was cloned into a suicide vector in fusion with the N-terminal sequence of the *B. pertussis* filamentous haemagglutinin gene (fha44) and flanked by the upstream and downstream sequences of the dermonecrotic toxin gene.

Results: Insertion of the fhA44:pspA construct in the genome of *B. pertussis* was confirmed by PCR and expression of the FHA44:PspA protein was confirmed by western-blot. Inactivated vaccines were prepared from two clones of Bp^{PspA} through the treatment with formaldehyde, producing wP^{PspA} vaccines, following the protocol of wP production at Instituto Butantan. Mice were immunized with three subcutaneous doses and the induction of anti-PspA IgG was evaluated in the sera. Although low levels of anti-PspA IgG were observed in immunized mice, significant increased survival against a lethal pneumococcal challenge was observed. Modifications in the inactivation protocol as well as increase in vaccine doses are being performed, in order to improve the anti-PspA immune responses.

Conclusion: Our results indicate that this is a promising strategy for the production of a double Pneumococcal and Pertussis vaccine.

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UMP. 727

Safety profile of the HPV vaccine. Six-year experience in Argentina's National Immunization Schedule

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Background: Argentina incorporated the HPV vaccine to the National Immunization Schedule (NIS) in 2011 for the immunization of girls aged 11 years-old with the objective of reducing the incidence and mortality of cervical cancer. Boys were included in the strategy since January 2017. The country runs a passive registry of adverse events following immunization (AEFI). Our aim is to present the safety profile of HPV vaccine in Argentina since its incorporation to the NIS.

Methods & Materials: Descriptive, observational, retrospective study of HPV vaccine AEFI. Events were analyzed and classified following the World Health Organization proposal of 2012. Rates (R) are expressed in 100,000 administered doses. Bivalent HPV vaccine was available for the period 2011-14, whereas quadrivalent HPV vaccine has been used since 2014 and exclusively since 2015.

Results: In the period October, 2011 - October, 2017, 4,287,986 HPV doses were administered (1^{st} dose = 2,035,452; 2^{nd} dose, 1,417,003; 3^{rd} dose, 835,532. Four hundred and twelve AEFI were notified in the study period (R = 9.6; dose 1 = 13.6; dose 2 = 5.1; dose 3 = 5.9). Program errors accounted for 50.8% of notifications (R = 4.9), among them, 4-dose schedules, inadequate intervals between doses and immunization of children not included in the target population. Immunization-related anxiety accounted for 19.7% of events (R = 1.9); non-conclusive, 3.4%; coincident, 3.2%. Eighty-eight (21%) events were considered related to immunization, of which 69 were mild (R = 1.6) and 11 were serious (T = 0.3). Of these, 8 cases were syncope with seizures, 1 rash and 2 of bronchospasm. All subjects recovered without sequelae.

Conclusion: HPV vaccine has showed an adequate safety profile in Argentina. Of concern, the high rate of immunization-related anxiety could lead to vaccine hesitancy, and to jeopardize the preventive strategy with this vaccine. Program errors have not leaded to harm. The system reveals high sensitivity and transparency and calls for continuous capacitation of human resource.

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UMP. 729

Pattern of animal bite, adherence and delays in initiating post exposure prophylaxis for rabies prevention

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Background: Rabies infection is a disease of public health importance. It is one of the neglected tropical diseases with almost 100% case fatality rate after onset of symptoms. The only proven approach in preventing rabies following exposure is Post Expo-