Process development of an affordable bivalent conjugate vaccine against the two major causes of enteric fever, *Salmonella typhi* and *Salmonella paratyphi* A  

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Background: A recent IVI study in Kolkata, India, found that 24% of enteric fever episodes were due to *S. paratyphi* A. Estimates indicate that the incidence of enteric fever, in India, due to *S. paratyphi* A is 2.2 million cases per annum. Vi based vaccines only protect against typhoid fever, thus there is a need for a bivalent vaccine that protects against both *S. typhi* and *S. paratyphi* A.  

Methods: IVI transferred its high yield, high recovery technology for Vi and Vi conjugate production to Shantha Biotechnics in 2009. A high yielding fed batch fermentation system for *Salmonella paratyphi* A was first developed. The Lipopolysaccharide was separated from the cells using micro and ultrafiltration then detoxified by acid hydrolysis to release O specific polysaccharide (OSP) from the Lipid A. The OSP was further purified by precipitation of contaminating Lipid A, proteins and nucleic acid, concentrated by ultrafiltration then sterilized by 0.2 mm filtration. The process developed uses equipment that is scalable and cGMP compliant thus it is anticipated that the technology transfer and scale up to a manufacturer will not be overly complicated.  

Results: OSP from *S. paratyphi* A has been successfully purified and the final bulk contains less than 1% of contaminating nucleic acid and protein, and very low endotoxin (by LAL) values. The purified OSP has been used to prepare a series of conjugates using Diphtheria Toxoid (DT) as the carrier protein. The conjugates are currently undergoing preclinical evaluation.  

Conclusion: We have developed a high yielding and efficient technologies for Vi and OSP production and for conjugation to these polysaccharides to DT. Our aim is to develop a cost effective bivalent conjugate vaccine for developing countries. This work was funded by the governments of Korea and Sweden.

Evaluation of serum concentration of endothelium nitric oxide synthase in *Helicobacter pylori* positive people  

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Objectives: Endothelium nitric oxide synthase (eNOS) is a type of enzyme which produces a endogenous factor called nitric oxide. NO plays important role in progress of euplastic diseases. In chronic gastritis induced by *Helicobacter pylori*, the production of NO enhances and damages DNA. The aim of present study is to evaluate eNOS concentration in serum of healthy people and those infected by HP.  

Methods: The sera and stools of 84 voluntaries were collected which 35.3% of them were women. HP antigen in stool samples and serum concentration of eNOS were determined using proper ELISA kits. Obtained data were analyzed using Excel software.  

Results: 16.6%, 29.76% and 53.57% of collected samples were equivocal, HP negative and positive respectively. Comparison of serum concentration of eNOS showed that there is no significant change among these three groups.  

Discussion: As mentioned in results the eNOS serum concentration shows no significant change in HP positive and negative groups. Albeit the other studies showed the significant increase in serum concentration of HP positive patient, this contradiction may arise from race and HP pathogenic slands such as VacA and CagA differences. We propose to conduct a similar study in Ardabil with special regard to pathogenic islands.

Prevalence of *Helicobacter pylori* infection and occurrence of gastric cancer in Northeast China  

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Background: Although the incidence of stomach adenocarcinoma has declined in the industrialized world, gastric cancer is still one of the major malignant tumors in Northeast China. The aim of this study was to explore the distribution of *Helicobacter pylori* (H. pylori) infection and atrophic gastritis in heath controls and gastric cancer patients and their role in gastric carcinogenesis in Northeast China.  

Methods: A total of 1072 healthy controls attending the physical examination center and 416 histologically confirmed gastric cancer patients hospitalizing for surgical operation at Jilin University, from August 2008 to December 2010, were included in this study. The IgG antibody titers of H. pylori and levels of pepsinogen I (PGI) and II (PGII) in serum of the subjects were measured using ELISA kits.  

Result: The rate of positive H. pylori IgG antibody titers was significantly higher in gastric cancer groups than that in healthy control groups. (70.7% verse 52.4%, P < 0.0001) The atrophic gastritis was more likely to be diagnosed in gastric cancer groups than those in the control groups (32.0% verse 10.4%, P < 0.001). More subjects with H. pylori infection had lower ratio of PGI and PGII (ratio<6.05; 39.4% verse 4.5%, P < 0.0001) and atrophic gastritis (15.0% verse 5.3%, P < 0.001) than those without H. pylori infection in the control groups. In addition to H. pylori infection and atrophic gastritis, multivariate logistic analysis suggested that male gender, elder age were also associated with gastric cancer.  

Conclusion: Our results indicating that the higher prevalence of H. pylori infection in gastric cancer patients in Northeast China. H. pylori infection is a much stronger risk factor for stomach adenocarcinoma. The study also confirmed that H. pylori infection were associated with atrophic gastritis, both H. pylori infection and atrophic gastritis were linked to the risk for gastric carcinogenesis. This work was supported by NSFC (No.81072369).

Rotavirus infection in Mongolian children  

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Introduction: Rotavirus infection (RV) widespread in Mongolia as other’s world. But, in Mongolia not conducted any study on rotavirus infection.  

Objective: To study the incidence clinical picture and molecular feature of RV infection in Mongolia.  

Method and Patients: We were observed 950 children under 5 years old (male 559), who was randomly selected patients with acute gastroenteritis from Sukhbaatar district’s Hospital in Ulaanbaatar from April 2009 to July 2010. In stool of all studied children detected antigen of RV (RV-Ag) by ELISA (DAKO). In positive samples detected genotype of RV by RT-PCR.