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Project Title: Study of antibody response and immune memory 15-18 years after hepatitis B virus vaccination (3rd year)

Project Number: DOH95-DC-1003

Executing Institute: national Taiwan University

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P.I. Position Title: Professor

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Abstract:

The duration of the protection conferred by the vaccine remains unknown. The need for HBV vaccine boosters 15 years after the primary immunization continues to be controversial. In the 1st year of the current study we measured HBV seromarkers among 6,156 high school students, who have received neonatal HBV immunization 15-18 years previously with plasma-derived HBV vaccine. Anti-HBs antibody was undetectable in 3,832 (62.2%) of the students. A booster dose of HBV was given to 859 students whose HBsAg, anti-HBs, and anti-HBc were all negative. Following the booster anti-HBs remained undetectable in 252 (29.3%), and were present at low levels (10-100 mIU/mL) in 228 (26.5%). The ELISPOT assay was used to innumerate HBsAg-specific T-cells expressing IFN- γ or IL-5-secreting peripheral blood mononuclear cells in 92 students who were anti-HBs, anti-HBs double negative and non-HBV carriers. Prior to the booster IFN- γ and IL-5-secreting spot assays were negative in 65.2% (60/92) of the students. Following the booster the assays remained negative in 27.2% (25/92). The presence of IFN- γ or IL-5-secreting spots correlated with anti-HBs levels. These findings indicate that immune memory conferred by a plasma-derived HBV vaccine had waned in about one third of vaccinees 15-18 years after the neonatal immunization. In the 2nd year, we followed up more than 2000 study subjects and found 128 previously anti-HBs (+) subjects have lost their anti-HBs in the previous year. There were 3 new HBV infections manifested as having positive anti-HBc. No new HBsAg carriers were found.

In the 3rd year, we will follow up these study subjects again and find out how many of them have lost their anti-HBs, as well as how many of them have get new infections or even became carriers. In addition to antibody determinations, we will

also perform ELISPOT for a small group of the study subjects. By knowing these, we will very likely be able to make a conclusion on whether a booster vaccination is indicated for subjects 15-18 years after their neonatal vaccinations.

Keyword: hepatitis B, vaccine, immune memory