Chapter 3: Aims and objectives

3.1 Important unanswered questions?

1. Differences in the cellular immune profiles of?

   HBsAg Positive Vs. HBsAg negative Newborns (HBsAg Positive mothers)

   Vs.

   Healthy Newborns (Healthy mothers)

2. Does HBV vaccination modulate the immune responses in HBsAg Positive Newborns?

3. Possible immune mechanisms for the failure of HBV vaccination in some newborns?

3.2 Hypothesis

Possible immune mechanism of HBV chronicity in the Newborns could be?

- Defective adaptive immune responses and neonatal tolerance
- T regulatory cells may play a major role.

3.3 Specific Objectives

Specific Objective1. To compare the immune status of newborns to HBsAg positive mothers and healthy mothers.

Part A To study the differences in the immune profiles of newborns to HBV positive mothers and healthy mothers in their peripheral blood vs. cord blood.

HBsAg Positive Newborns (HBsAg Positive mothers)
Vs.
HBsAg Negative Newborns (HBsAg Positive mothers)
Vs.
Healthy Newborns (Healthy mothers)

Newborns to HBsAg positive mothers were divided into two groups on the basis of HBV DNA and HBsAg positivity:

HBsAg positive newborns (Group I: HBsAg+, HBV DNA+),

HBsAg negative newborns (Group II: HBsAg- and HBV DNA-,)

Healthy Newborns (Group III)

Part B Functional characterization of T cells in HBsAg positive vs. HBsAg negative vs. healthy newborns.

Specific Objective 2. To study the immune modulations produced by HBV vaccination in the newborns

Differences in cellular immune profiles of HBsAg positive and HBsAg negative newborns born to HBsAg positive mothers and newborns to healthy mothers and response to vaccination.

Apart, from the specific objectives proposed in the thesis, I have added a small piece of work done on characterization of early B cell development in HBsAg positive newborns

Specific objective 3. Investigation of the peripheral *exvivo* frequencies of various B cell subsets in the newborns at birth (pre-vaccination).

(Immature, Transitional, Naïve, memory, and plasma cells)

(a)To analyze the changes in the B cell profile and various subset distribution at 12 months post vaccination.