ABO incompatibility between HLA antigens CLASS I are found hemolysate. The existence of male spouse HLA and ABO antigens in RBCs of pregnant woman with blood group 'O' contain ABO antigens. RBCs of pregnant woman contain HLA antigens of her male spouse.

Potential Products
1. Human genes antigen in highly pure state
2. Injections containing specific human gene antigen capable of treating autoimmune disorders with no side effects what so ever.
3. Vaccines for immunotherapy of malignant tumors
4. Vaccines for treatment of parasites infestations with no side effects what so ever.
5. Vaccines for treating some cases of infertility and repeated abortions
6. Vaccines for treating hypersensitivity to food, bacteria and other environment materials.
7. Diagnostic tests for autoimmune disorders with high specificity and accuracy.
8. Diagnostic tests for malignant tumors which can detect those tumors as early as possible and before any other available technique can do.
9. Diagnostic tests for parasites which can detect even the exposure to those parasites. This feature is currently not available.
10. Laboratory tests to evaluate the state of tolerance to a particular antigen which can be used to monitor patients with hypersensitivity.

Rediscovering Red Blood Cells: a Possible Role in Transplantation Protection of Fetus as Allograft

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Current Understanding of Transplantation Protection of Fetus

Passive resistance to cytotoxicity
- Extra-vascular cytotoxic lymphocytes (EVC) that cannot come into direct contact with maternal tissues do not express Class I or II antigens.
- EVC express HLA-G, which may protect cells in direct contact from NK cells.
- EVC express a high level of complement regulatory proteins on their surface to protect themselves from cytotocicity.

Active immuno-regulatory responses
- Cellular adaptation in placenta bed site: macrophages and lymphocytes with arrested maturation.
- Complex interactive cytokine network that is released by lymphocytes of endometrium to provide immuno-suppression.
- Soluble isoforms of HLA-G may inhibit the local proliferation of maternal T cells by induction of cell death because soluble HLA-A and HLA-B do in the periphery.

Protection from maternal antibodies
- Non-antiproliferative cells bearing fetal HLA antigens (macrophages, fibroblasts, endothelium) within the villous mesenchyme of placental tissue efficiently bound the maternal HLA-specific alloantibodies.

Tolerance
- No absolute tolerance, low-affinity auto-antibodies exist normally against self-antigens.
- It is a process that continues throughout life but begins during fetal development.

Observations
- ABO incompatibility between female and male spouse sometimes is the cause of HDFN.
- In most cases, delivered infants are not affected by ABO incompatibility which means that there is an efficient mechanism that can handle this.

Induction

How do circulating IgG antibodies which work against blood groups 'A' and 'B' in a pregnant woman with blood group 'O' do not harm the fetus who is not 'O'? Where do those antigens come from? How do those antigens reach the placenta without being trapped by the immune system?

Potential Products
1. Human genes antigen in highly pure state
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Theory
- ABO antigens exist in hemolysate if and only if the male spouse is not 'O'.
- The existences of male spouse HLA and ABO antigens in RBCs of female spouse prove that this phenomenon plays role in protecting the fetus.
- The existence of self HLA antigens together with spouse antigens in RBCs points out that this phenomenon may play a role in tolerance.

Consistent

Hypotheses

Deduce

Not Consistent

Modify Hypotheses

Predictions
RBCs of pregnant woman with blood group ‘O’ contain ABO antigens. RBCs contain self HLA antigens. RBCs of pregnant woman contain HLA antigens of her male spouse.

Experiments

Self HLA antigens CLASS I are found hemolysate
Male spouse HLA antigens CLASS I are found hemolysate

Design

This phenomenon provides a better understanding about tolerance. Such an understanding will revolutionize the treatment of some cases of infertility or repeated abortion, and some serious medical disease conditions such as hypersensitivity, autoimmune and malignant disorders. Further, it will enable monitoring the state of tolerance which will help in developing diagnostic kits that have better sensitivity and accuracy than the currently available.

Experiment 1: Prepare saline solution using fresh blood and extract plasma.
Experiment 2: Prepare saline solution using fresh blood and extract plasma.
Experiment 3: Prepare saline solution using fresh blood and extract plasma.
Experiment 4: Prepare saline solution using fresh blood and extract plasma.

ABO Antigens are found in females with blood group O, A, and B
ABO Antigens are not found in females with blood group O, A, and B if: their male spouse is O or single