

# INVESTIGATING THE PERIPHERAL BLOOD TIM-3 POSITIVE NK AND CD8+ T CELLS DURING PREGNANCY

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## Problem

TIM-3 (T-cell immunoglobulin and mucin domain-3) is a relatively newly described molecule with a conserved structure and important immunological functions. Multiple immune cells expressing TIM-3 therefore it has been implicated both in activation and inhibition of immune responses. Identification of Galectin-9 as a ligand for TIM-3 has established the Galectin-9/TIM-3 pathway as an important negative regulator of Th1 immunity and tolerance induction. Data about the role of TIM-3/Gal-9 pathway in the pathogenesis of human diseases is emerging, but data about their role during human pregnancy is still not clear. We have therefore investigated the number, phenotype and functional activity of TIM-3+ peripheral blood mononuclear cells during healthy human pregnancy.

## Methods of study

30 healthy pregnant women [first trimester (n=10); second trimester (n=10); third trimester (n=10)] and 15 non-pregnant controls were included in this study. We measured the surface expression of TIM-3 by cytotoxic T cells, NK cells and NK cell subsets and Galectin-9 expression by regulatory T cells by flow cytometry. We analyzed the cytokine production and cytotoxicity of TIM3+ and TIM3- CD8 T and NK cells of non-pregnant and healthy pregnant women at different stages of pregnancy by flow cytometry. Serum Galectin-9 levels were measured by ELISA.

## Results

Our results show that the numbers of NK and cytotoxic T cells and their TIM-3 expression do not change between the first, second and third trimesters of pregnancy. Compared to non pregnant individuals, regulatory T cells show higher level of Galectin-9 expression as pregnancy proceeds, which is in line with the data obtained analyzing sera for soluble Galectin-9. Cytotoxic T cells, NK cells and NK cell subsets expressing TIM-3 molecule show altered cytokine production and cytotoxicity during pregnancy compared to non pregnant state.

## Conclusion

Our results indicate that Galectin-9 expressing regulatory T cells, TIM-3+ cytotoxic T cells and NK cells could play an important role in the maintenance of healthy pregnancy.

This research was supported by the TÁMOP 4.2.4.A/2-11-1-2012-0001 'National Excellence Program', OTKA 104960 and Janos Bolyai Research Scholarship of the Hungarian Academy of Sciences to L. Szereday.