

4th Glycobiology World Congress

September 17-19, 2018 | Rome, Italy

Glyco profiling of seminal plasma: Hopes and drawbacks for male infertility testing

Mirosława Ferens-Sieczkowska
Wrocław Medical University, Poland

Conception problems affect about 15% of couples in developed countries. A male factor is considered crucial or co-existing in at least half of these cases, but evaluation of the reasons of male decreased reproductive potential is fairly not sufficient. Andrologists claim urgent need for reliable diagnostic and prognostic biomarkers, as well as molecular targets for potential treatments. Considering the importance of carbohydrate-protein interactions in different aspects of fertilization, male infertility becomes a field of interest for glycobiology. Interestingly, both sperm and seminal plasma glycome of fertile men contain substantial amounts of immunomodulatory glyco-epitopes, usually rare in normal body fluids. These motifs include LeX, bisecting GlcNAc, and high-mannose type glycans. It has been hypothesized that this unusual glycosylation profile is engaged in receiving maternal immune privilege during fertilization and pregnancy. If this hypothesis is true, at least some cases of infertility may be related to incorrect glycosylation patterns within male reproductive tract. Our research is thus focused on the comparison of seminal plasma glycomes of fertile and infertile male subjects. Although we have found significant alterations in fucosylation, sialylation and high-mannose glycan content, these results are still far from diagnostically valuable conclusions. The main challenge is the complexity of seminal plasma, consisting of secretions of testes, epididymis and different accessory glands. Some experimental data suggest that their glycosylation pathways are not necessarily identical. Regarding extreme inter-individual variability also, it seems that the successful search for infertility glyco-biomarkers requires careful selection of candidate glycoproteins, representing particular parts of male reproductive tract.

mirosława.ferens-sieczkowska@am.wroc.pl