

Final project for the bachelor's degree in Biochemistry and Molecular Biology



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DIABETES AND METABOLIC
ASSOCIATED DISEASES
RESEARCH GROUP

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Extracellular Vesicles in Gestational Diabetes Mellitus: Biochemical Characterization and Clinical Implications

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The present Final Degree Project was done based on the External Practices carried out in the Diabetes and Metabolic Associated Diseases Research Group (DIAMET), located at the Pere Virgili Health Research Institute (IISPV) of Joan XXIII University Hospital, Tarragona, Spain, under the supervision of Dr. Carlos Castaño Pérez, Dra. Ana Megia Colet and Dra. Sonia Fernández-Veledo. **The results presented here are confidential.**

1. Abstract

Small extracellular vesicles (sEVs) mediate inter-organ communication and are essential for fetal development and maternal health. Their profile is altered in gestational diabetes mellitus (GDM). This project aimed to define the sEV “fingerprint” in GDM. sEVs and microbiota-derived sEVs (msEVs) were isolated from plasma of normal glucose tolerance women and GDM pregnancies using size exclusion chromatography and density gradient ultracentrifugation. Nanoparticle tracking and proteomic analyses were performed. An increased concentration of circulating sEVs and placenta-derived sEVs in umbilical cord blood was observed in both groups, with no changes in msEVs. These findings suggest sEV alterations may reflect placental responses to GDM.