Title: Immunohistochemichal Analysis of PAF Receptor in Pulmonary Vessels of Fetal Lambs
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In utero, the fetus is exposed to low oxygen levels, a desirable physiological condition for fetal pulmonary haemodynamics that maintains a high pulmonary vascular resistance (PVR), such that pulmonary blood flow is only 8-10% of total cardiac output. At birth, with oxygenation, PVR falls dramatically and blood flow to the lungs increases to accommodate the total cardiac output. However, if the newborn is exposed to low oxygen levels, the blood vessels of the lungs thicken and narrow due to overgrowth of the smooth muscle cells (SMC) in the vessels, the baby remains blue, a condition known as Persistent Pulmonary Hypertension of the Newborn (PPHN), a condition which leads to high morbidity and mortality. Platelet Activating Factor (PAF) is an endogenous lipid molecule with a variety of physiological and pathological properties. In ovine fetal pulmonary vascular smooth muscle cells, hypoxia increases the PAF receptor, (PAFR) gene expression, PAFR density and PAFR binding, indicating that a high PAF level and its activities in fetal lungs are in part responsible for maintaining the desirable high fetal PVR in utero, but manifests as PPHN with high postnatal PVR. In spite of the tremendous advancement in therapy, of newborn diseases, PPHN is still associated with a high morbidity and mortality, accounting for about 10-20% of neonatal mortalities. We hypothesized that the chronic hypoxia in utero will result in over-expression of PAF Receptors and PAF binding in pulmonary vascular tissues of the fetal lamb, aiding to maintain the high PVR in utero.

References

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