

Methodological characteristics of included studies (maternal serum leptin)			
Year; author	Study type	Inclusion criteria	Exclusion criteria
Nezar et al, 2008 [14]	Prospective cohort	<ul style="list-style-type: none"> • Singleton pregnancies • FGR: EFW<10TH centile 	<ul style="list-style-type: none"> • Multiple pregnancies • Evidence of chromosomal abnormalities or fetal anatomic defects • Consent not given
Stefaniak et al, 2022 [16]	Prospective cohort	<ul style="list-style-type: none"> • Singleton pregnancies • FGR: AC<5TH centile + BW<10th centile 	<ul style="list-style-type: none"> • Multiple pregnancies • Consent not given
Visentin et al, 2014 [15]	Retrospective cohort	<ul style="list-style-type: none"> • Singleton pregnancies • FGR: EFW <10TH centile + UA Pulsatility Index > 2 SD 	<ul style="list-style-type: none"> • Multiple pregnancies • Evidence of chromosomal abnormalities or fetal anatomic defects • Consent not given • Pregnancies complicated by maternal history of cardiovascular disease or endocrine disorder • Clinical chorioamnionitis • Consumption of alcohol, smoke, nicotine, or any medication such as ritodrine and corticosteroids (except for fetal lung maturation) • Amniotic fluid disorders • Placental abnormalities
Zareean et al, 2017 [18]	Cross – sectional study	<ul style="list-style-type: none"> • maternal age <40 yr • singleton pregnancy • gestational age >36 weeks • non-smoking and substance abuse or teratogenic drug • body mass index (BMI) between 20-27 Kg/m² 	<ul style="list-style-type: none"> • Multiple pregnancies • Inability to determine the level of leptin • Withdrawal of participants • Pregnancy complications • Systemic problems including: kidney disease, anemia, history of diabetes before pregnancy, heart disease • FGR in previous pregnancy • Pregnancy with assisted reproductive techniques (ART) • Congenital malformations
Aydin et al, 2015 [20]	Prospective case control	<ul style="list-style-type: none"> • IUGR: BW or length <10th percentile with pathological fetal growth restriction • Maternal age 18-40 • Singleton pregnancy • Gestational age 36-40 • IUGR diagnosed in second or third trimester 	<ul style="list-style-type: none"> • BW> 10th percentile • Multiple pregnancies • Systemic illness (gestational diabetes, preeclampsia, eclampsia, chronic hypertension, vascular diseases, thrombophilia) • Infectious diseases • Uterine malformation • Smoking • Fetuses with congenital malformation or chromosomal anomaly • Consent not given
Catov et al, 2007 [17]	Nested case control study	<ul style="list-style-type: none"> • SGA: <10th percentile • Nulliparous • Normotensive • Maternal age 14-44 • <20 weeks' gestation when enrolled 	<ul style="list-style-type: none"> • Preeclampsia • Transient hypertension • Multiple gestation • Gestational diabetes • Chronic conditions • Positive toxicology screen • Consent not given
Ferrero et al, 2014 [61]	Prospective study	<ul style="list-style-type: none"> • FGR: <10th percentile and normal Doppler values 	<ul style="list-style-type: none"> • Consent not given • Use of drugs that may interfere with fetal growth or biochemical markers • Genetic alterations of growth potential • Gestational diabetes • Multiple pregnancy • Hypertension or preeclampsia • Pregnancy not controlled at the hospital • Delivery attended in other hospital
Garofoli et al, 2022 [19]	Prospective longitudinal observational study	<ul style="list-style-type: none"> • IUGR: flussimetric findings during ultrasound imaging and did not reach their genetically determined potential growth • Breastfeeding until the end of the third month of life 	<ul style="list-style-type: none"> • Infants with congenital malformations • Infants with infection • Genetic syndromes • Formula fed • Infants large for gestational age • Consent not given

Jenkins et al, 2007 [60]	Case control study	<ul style="list-style-type: none"> • SGA: BW<10th centile • Normal controls: no clinical signs of hypertension, diabetes or infection 	<ul style="list-style-type: none"> • Consent not given
Kyriakakou et al, 2008 [38]	Prospective cohort	<ul style="list-style-type: none"> • IUGR: BW<3rd centile • Full term singleton infants 	<ul style="list-style-type: none"> • Consent not given
Laivuori et al, 2006 [62]	Cross sectional study	<ul style="list-style-type: none"> • IUGR • Written informed consent • Controls: uncomplicated pregnancies 	<ul style="list-style-type: none"> • Preexisting diabetes • Consent not given
Lepercq et al, 2002 [63]	Cross sectional study	<ul style="list-style-type: none"> • Normotensive IUGR : BW<10th percentile • Controls: AGA preterm infants <p>Informed consent</p>	<ul style="list-style-type: none"> • Diabetes • Obesity • Consent not given
Mise et al, 2007 [64]	Retrospective cohort	<ul style="list-style-type: none"> • Group A preeclampsia ± SGA • Group B non preeclampsia ±SGA • SGA: BW<10th percentile 	<ul style="list-style-type: none"> • Consent not given

Table S1. The methodological characteristics of the included studies that investigated leptin. Abbreviations: **FGR**: Fetal Growth Restriction, **IUGR**: Intrauterine Growth Restriction, **EFW**: Estimated Fetal Weight, **SGA**: Small for Gestational Age, **BW**: Birth Weight, **SD**: Standard Deviation.