

REF			SYSTEM
07027648190	07027648500	100	cobas e 402 cobas e 801

English

System information

Short name	ACN (application code number)
PLGF	10038

Intended use

Immunoassay for the in vitro quantitative determination of placental growth factor (PIGF) in human serum.

The Elecsys PIGF assay is used in combination with the Elecsys sFlt-1 assay to determine the sFlt-1/PIGF ratio. The sFlt-1/PIGF ratio is intended for use as an aid in the diagnosis of preeclampsia in conjunction with other diagnostic and clinical information.

In addition the sFlt-1/PIGF ratio is intended for use as an aid in short-term prediction of preeclampsia (rule-out and rule-in) in pregnant women with suspicion of preeclampsia in conjunction with other diagnostic and clinical information.

This assay is intended for the use as one component, in combination with other parameters, to evaluate the risk of early-onset preeclampsia during the first trimester of pregnancy.

The electrochemiluminescence immunoassay "ECLIA" is intended for use on **cobas e** immunoassay analyzers.

Summary

Preeclampsia (PE) is a serious complication of pregnancy characterized by hypertension and proteinuria after 20 weeks of gestation. Preeclampsia occurs in 3-5 % of pregnancies and results in substantial maternal and fetal or neonatal mortality and morbidity. Clinical manifestations can vary from mild to severe forms; preeclampsia is still one of the leading causes of fetal and maternal morbidity and mortality.^{1,2,3,4,5,6}

Preeclampsia appears to be due to the release of angiogenic factors from the placenta that induces endothelial dysfunction. Serum levels of PIGF (placental growth factor) and sFlt-1 (soluble fms-like tyrosine kinase-1, also known as soluble VEGF receptor-1) are altered in women with preeclampsia. Moreover, circulating levels of PIGF and sFlt-1 can discriminate normal pregnancy from preeclampsia even before clinical symptoms occur. In normal pregnancy, the pro-angiogenic factor PIGF increases during the first two trimesters and decreases as pregnancy progresses to term. In contrast, levels of the anti-angiogenic factor sFlt-1 remain stable during the early and middle stages of gestation and increase steadily until term. In women who develop preeclampsia, sFlt-1 levels have been found to be higher and PIGF levels have been found to be lower than in normal pregnancy.^{7,8,9,10}

The ratio of sFlt-1 to PIGF has been shown to be a better predictor of preeclampsia than either measure alone. The sFlt-1/PIGF ratio seems a reliable tool for discriminating between different types of pregnancy-related hypertensive disorders. In addition, sFlt-1/PIGF has potential relevance as a prognostic parameter in PE and may be useful in prediction of preeclampsia and related maternal and fetal adverse outcomes, risk stratification and management.^{5,11,12,13,14,15,16,17,18,19}

In patients with signs and symptoms of preeclampsia, the sFlt-1/PIGF ratio was proven helpful in the short-term prediction of the disease.^{17,18} The sFlt-1/PIGF ratio can also improve the prediction of early-onset preeclampsia for women with risk factors (including: history of intrauterine growth restriction (IUGR); preeclampsia; eclampsia; hemolysis, elevated liver enzymes and low platelet count (HELLP) syndrome; pre-gestational diabetes; abnormal uterine artery Doppler ultrasound).²⁰ In unselected nulliparous women with a singleton pregnancy, screening with the sFlt-1/PIGF ratio at ≈ 20 , ≈ 28 , and ≈ 36 gestational weeks was proven to provide clinically useful prediction of the risk of the most important manifestations of preeclampsia (at 36 gestational weeks, an sFlt-1/PIGF ratio ≤ 38 had a negative predictive value for severe preeclampsia of more than 99 %).²¹

A high sFlt-1/PIGF ratio is associated with a shorter remaining pregnancy duration and a higher risk of preterm delivery.²² The use of the sFlt-1/PIGF ratio was demonstrated to influence clinical decision making towards appropriate hospitalization in a considerable proportion of women with

suspected preeclampsia.²³ An health economic study demonstrated that introducing the sFlt-1/PIGF ratio test into clinical practice in the UK can be cost-saving by reducing unnecessary hospitalization of women at low risk of developing preeclampsia.²⁴ The Elecsys sFlt-1/PIGF ratio, used with standard clinical assessment and subsequent clinical follow-up, is recommended by the UK National Institute for Health and Care Excellence (NICE) to help rule-out preeclampsia in women presenting with suspected preeclampsia between 20 weeks and 34+6 weeks of gestation.²⁵

In the first trimester of pregnancy, different screening models using PIGF as one of the components have been proposed for predicting the risk of early onset preeclampsia.^{26,27,28,29,30,31}

In summary, PIGF and sFlt-1 concentrations measured by immunoassay in maternal blood improve the diagnostic possibilities in preeclampsia which comprise clinical symptoms, proteinuria and uterine artery Doppler velocimetry.^{5,6,13,15,16,32,33,34}

PIGF in cardiovascular diseases: PIGF can be detected in normal non-pregnant subjects at lower levels. Increased levels of PIGF can be found in patients with cardiovascular diseases as an indicator of micro- and macrovascular atherosclerosis and as a sign of pathological angiogenesis. In addition PIGF has been shown to be an independent predictor of cardiovascular morbidity and mortality in patients with type 1 and type 2 diabetes.^{35,36,37,38}

Test principle

Sandwich principle. Total duration of assay: 18 minutes.

- 1st incubation: 30 μ L of sample, a biotinylated monoclonal PIGF-specific antibody and a monoclonal PIGF-specific antibody labeled with a ruthenium complex^{a)} react to form a sandwich complex.
- 2nd incubation: After addition of streptavidin-coated microparticles, the complex becomes bound to the solid phase via interaction of biotin and streptavidin.
- The reaction mixture is aspirated into the measuring cell where the microparticles are magnetically captured onto the surface of the electrode. Unbound substances are then removed with ProCell II M. Application of a voltage to the electrode then induces chemiluminescent emission which is measured by a photomultiplier.
- Results are determined via a calibration curve which is instrument-specifically generated by 2-point calibration and a master curve provided via the **cobas** link.

a) Tris(2,2'-bipyridyl)ruthenium(II)-complex ($\text{Ru}(\text{bpy})_3^{2+}$)

Reagents - working solutions

The **cobas e** pack is labeled as PLGF.

- M Streptavidin-coated microparticles, 1 bottle, 5.8 mL:
Streptavidin-coated microparticles 0.72 mg/mL; preservative.
- R1 Anti-PIGF-Ab~biotin, 1 bottle, 7.2 mL:
Biotinylated monoclonal anti-PIGF antibody (mouse) 0.6 mg/L;
phosphate buffer 50 mmol/L, pH 6.0; preservative.
- R2 Anti-PIGF-Ab~ $\text{Ru}(\text{bpy})_3^{2+}$, 1 bottle, 7.2 mL:
Monoclonal anti-PIGF antibody (mouse) labeled with ruthenium complex 4.0 mg/L; phosphate buffer 50 mmol/L, pH 6.0; preservative.

Precautions and warnings

For in vitro diagnostic use for health care professionals. Exercise the normal precautions required for handling all laboratory reagents.

Infectious or microbial waste:

Warning: handle waste as potentially biohazardous material. Dispose of waste according to accepted laboratory instructions and procedures.

Environmental hazards:

Apply all relevant local disposal regulations to determine the safe disposal.

Safety data sheet available for professional user on request.

This kit contains components classified as follows in accordance with the Regulation (EC) No. 1272/2008:



Warning

H317 May cause an allergic skin reaction.

Prevention:

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves.

Response:

P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

P362 + P364 Take off contaminated clothing and wash it before reuse.

Disposal:

P501 Dispose of contents/container to an approved waste disposal plant.

Product safety labeling follows EU GHS guidance.

Contact phone: all countries: +49-621-7590

Avoid foam formation in all reagents and sample types (specimens, calibrators and controls).

Reagent handling

The reagents in the kit have been assembled into a ready-for-use unit that cannot be separated.

All information required for correct operation is available via the **cobas** link.

Storage and stability

Store at 2-8 °C.

Do not freeze.

Store the **cobas e** pack **upright** in order to ensure complete availability of the microparticles during automatic mixing prior to use.

Stability:	
unopened at 2-8 °C	up to the stated expiration date
on the analyzers	16 weeks

Specimen collection and preparation

Only the specimens listed below were tested and found acceptable.

Serum collected using standard sampling tubes or tubes containing separating gel.

After centrifugation, the separated serum sample should be stored at 2-8 °C for a maximum of 48 hours inclusive of shipment of the sample at 2-8 °C. Measure samples immediately or freeze them at -20 °C (± 5 °C) or lower for up to 6 months. Freeze only once.

The sample types listed were tested with a selection of sample collection tubes that were commercially available at the time of testing, i.e. not all available tubes of all manufacturers were tested. Sample collection systems from various manufacturers may contain differing materials which could affect the test results in some cases. When processing samples in primary tubes (sample collection systems), follow the instructions of the tube manufacturer.

Centrifuge samples containing precipitates before performing the assay.

Do not use heat-inactivated samples.

Do not use samples and controls stabilized with azide.

Ensure the samples and calibrators are at 20-25 °C prior to measurement.

Due to possible evaporation effects, samples and calibrators on the analyzers should be analyzed/measured within 2 hours.

Materials provided

See "Reagents – working solutions" section for reagents.

Materials required (but not provided)

- [REF] 05144701190, PIGF CalSet, for 4 x 1.0 mL
- [REF] 05341787190, PreciControl Multimarker, for 6 x 2.0 mL
- General laboratory equipment
- **cobas e** analyzer

Additional materials for **cobas e** 402 and **cobas e** 801 analyzers:

- [REF] 06908799190, ProCell II M, 2 x 2 L system solution
- [REF] 04880293190, CleanCell M, 2 x 2 L measuring cell cleaning solution
- [REF] 07485409001, Reservoir Cup, 8 cups to supply ProCell II M and CleanCell M
- [REF] 06908853190, PreClean II M, 2 x 2 L wash solution
- [REF] 05694302001, Assay Tip/Assay Cup tray, 6 magazines x 6 magazine stacks x 105 assay tips and 105 assay cups, 3 wasteliners
- [REF] 07485425001, Liquid Flow Cleaning Cup, 2 adaptor cups to supply ISE Cleaning Solution/Elecsys SysClean for Liquid Flow Cleaning Detection Unit
- [REF] 07485433001, PreWash Liquid Flow Cleaning Cup, 1 adaptor cup to supply ISE Cleaning Solution/Elecsys SysClean for Liquid Flow Cleaning PreWash Unit
- [REF] 11298500316, ISE Cleaning Solution/Elecsys SysClean, 5 x 100 mL system cleaning solution

Assay

For optimum performance of the assay follow the directions given in this document for the analyzer concerned. Refer to the appropriate operator's manual for analyzer-specific assay instructions.

Resuspension of the microparticles takes place automatically prior to use.

Place the cooled (stored at 2-8 °C) **cobas e** pack on the reagent manager. Avoid foam formation. The system automatically regulates the temperature of the reagents and the opening/closing of the **cobas e** pack.

Calibration

Traceability: This method has been standardized against a commercially available PIGF assay, which in turn was standardized against highly purified PIGF by weight.

The predefined master curve is adapted to the analyzer using the relevant CalSet.

Calibration frequency: Calibration must be performed once per reagent lot using fresh reagent (i.e. not more than 24 hours since the **cobas e** pack was registered on the analyzer).

Calibration interval may be extended based on acceptable verification of calibration by the laboratory.

Renewed calibration is recommended as follows:

- after 12 weeks when using the same reagent lot
- after 28 days when using the same **cobas e** pack on the analyzer
- as required: e.g. quality control findings outside the defined limits

Quality control

For quality control, use PreciControl Multimarker.

In addition, other suitable control material can be used.

Controls for the various concentration ranges should be run individually at least once every 24 hours when the test is in use, once per **cobas e** pack, and following each calibration.

The control intervals and limits should be adapted to each laboratory's individual requirements. Values obtained should fall within the defined limits. Each laboratory should establish corrective measures to be taken if values fall outside the defined limits.

If necessary, repeat the measurement of the samples concerned.

Follow the applicable government regulations and local guidelines for quality control.

Calculation

The analyzer automatically calculates the analyte concentration of each sample in pg/mL.

Limitations - interference

The effect of the following endogenous substances and pharmaceutical compounds on assay performance was tested. Interferences were tested up to the listed concentrations and no impact on results was observed.

Endogenous substances

Compound	Concentration tested
Bilirubin	≤ 428 μmol/L or ≤ 25 mg/dL
Hemoglobin	≤ 0.311 mmol/L or ≤ 500 mg/dL
Intralipid	≤ 1500 mg/dL
Biotin	≤ 123 nmol/L or ≤ 30 ng/mL
Rheumatoid factors	≤ 600 IU/mL

Criterion: For concentrations of 3-50 pg/mL the deviation is $\leq \pm 10$ pg/mL. For concentrations > 50 pg/mL the deviation is $\leq \pm 15$ %.

Samples should not be taken from patients receiving therapy with high biotin doses (i.e. > 5 mg/day) until at least 8 hours following the last biotin administration.

There is no high-dose hook effect at PIGF concentrations up to 100000 pg/mL.

Pharmaceutical substances

In vitro tests were performed on 16 commonly used pharmaceuticals. Of these only acetylcysteine at therapeutic dosage levels showed interference with the assay (PIGF values depressed).

In rare cases, interference due to extremely high titers of antibodies to analyte-specific antibodies, streptavidin or ruthenium can occur. These effects are minimized by suitable test design.

For diagnostic purposes, the results should always be assessed in conjunction with the patient's medical history, clinical examination and other findings.

Limits and ranges

Measuring range

3-10000 pg/mL (defined by the Limit of Detection and the maximum of the master curve). Values below the Limit of Detection are reported as < 3 pg/mL. Values above the measuring range are reported as > 10000 pg/mL.

Lower limits of measurement

Limit of Blank, Limit of Detection and Limit of Quantitation

Limit of Blank = 2 pg/mL

Limit of Detection = 3 pg/mL

Limit of Quantitation = 10 pg/mL

The Limit of Blank, Limit of Detection and Limit of Quantitation were determined in accordance with the CLSI (Clinical and Laboratory Standards Institute) EP17-A2 requirements.

The Limit of Blank is the 95th percentile value from $n \geq 60$ measurements of analyte-free samples over several independent series. The Limit of Blank corresponds to the concentration below which analyte-free samples are found with a probability of 95 %.

The Limit of Detection is determined based on the Limit of Blank and the standard deviation of low concentration samples. The Limit of Detection corresponds to the lowest analyte concentration which can be detected (value above the Limit of Blank with a probability of 95 %).

The Limit of Quantitation is the lowest analyte concentration that can be reproducibly measured with an intermediate precision CV of ≤ 20 %.

It has been determined using low concentration PIGF samples.

Dilution

Not necessary due to the broad measuring range.

Expected values

The following results were obtained in the Prospective Multicenter Study: Diagnosis of Preeclampsia by means of the Elecsys sFlt-1 assay and the Elecsys PIGF assay (Roche study No. CIM RD000556/X06P006).¹⁶

To define the reference ranges for normal pregnancies, 877 normotensive pregnant women from 9 sites in Europe (Germany, Spain, Austria, Czech Republic, Switzerland) provided samples at 1685 visits. All women had a singleton pregnancy with normal pregnancy outcome (i.e. no preeclampsia/HELLP syndrome, no IUGR). For each sample the levels of sFlt-1 and PIGF were determined in parallel and the sFlt-1/PIGF ratio was calculated.

Gestational week: defined as completed weeks of pregnancy beginning with the start of the last menstruation cycle.

The following results were obtained:

Percentile Elecsys sFlt-1 assay (pg/mL)

	Gestational week						
	10+0- 14+6	15+0- 19+6	20+0- 23+6	24+0- 28+6	29+0- 33+6	34+0- 36+6	37+0- delivery
5th percentile	652	708	572	618	773	992	1533
50th percentile	1328	1355	1299	1355	1742	2552	3485
95th percentile	2501	2807	2997	3205	5165	7363	9184
N (visits)	246	157	217	346	319	224	176

Percentile Elecsys PIGF assay (pg/mL)

	Gestational week						
	10+0- 14+6	15+0- 19+6	20+0- 23+6	24+0- 28+6	29+0- 33+6	34+0- 36+6	37+0- delivery
5th percentile	28.8	66.2	119	169	114	78.0	54.4
50th percentile	52.6	135	264	465	471	284	191
95th percentile	122	289	605	1117	1297	984	862
N (visits)	246	157	217	346	319	224	176

Percentile Elecsys sFlt-1/PIGF ratio

	Gestational week						
	10+0- 14+6	15+0- 19+6	20+0- 23+6	24+0- 28+6	29+0- 33+6	34+0- 36+6	37+0- delivery
5th percentile	9.27	3.51	1.82	0.945	0.941	1.23	2.18
50th percentile	24.8	10.5	4.92	3.06	3.75	9.03	19.6
95th percentile	54.6	25.7	14.6	10.0	33.9	66.4	112
N (visits)	246	157	217	346	319	224	176

Each laboratory should investigate the transferability of the expected values to its own patient population and if necessary determine its own reference ranges.

Specific performance data

Representative performance data on the analyzers are given below. Results obtained in individual laboratories may differ.

Precision

Precision was determined using Elecsys reagents, samples and controls in a protocol (EP05-A3) of the CLSI (Clinical and Laboratory Standards Institute): 2 runs per day in duplicate each for 21 days ($n = 84$). The following results were obtained:

cobas e 402 and cobas e 801 analyzers					
		Repeatability		Intermediate precision	
Sample	Mean pg/mL	SD pg/mL	CV %	SD pg/mL	CV %
Human serum 1	6.82	0.226	3.3	0.351	5.1
Human serum 2	82.7	1.08	1.3	1.54	1.9
Human serum 3	860	8.40	1.0	12.7	1.5
Human serum 4	4528	62.6	1.4	81.3	1.8
Human serum 5	9219	130	1.4	213	2.3
PC ^{b)} Multimarker 1	89.2	1.20	1.3	1.66	1.9
PC Multimarker 2	874	12.4	1.4	13.5	1.5

b) PC = PreciControl

Clinical sensitivity and specificity

Aid in diagnosis of preeclampsia:

The following results were obtained in the Prospective Multicenter Study: Diagnosis of Preeclampsia by means of the Elecsys sFit-1 assay and the Elecsys PIGF assay (Roche study No. CIM RD000556/X06P006).¹⁶

In this case-control study, the Elecsys sFit-1 and Elecsys PIGF assays were tested in parallel on samples from 468 pregnant women with normal pregnancy outcome (no preeclampsia/HELLP syndrome, no IUGR) and 234 patients with preeclampsia/HELLP syndrome. All pregnancies were singleton pregnancies. Preeclampsia was defined as new onset of both hypertension (systolic blood pressure \geq 140 mmHg or diastolic blood pressure \geq 90 mmHg) and proteinuria ($>$ 0.3 g/24 h or dipstick \geq 1+ if a 24 h urine collection could not be obtained) after week 20 of gestation. A PE-pregnancy was defined as early-onset PE if clinical signs of PE appeared before week 34 of gestation. Different sets of cutoffs are suggested for early-onset and late-onset preeclampsia.

Early gestational phase (week 20+0 - week 33+6)

Aid in diagnosis of preeclampsia			
	sFit-1/PIGF ratio	Sensitivity	Specificity
Rule-out cutoff	33	95.0 %	94.0 %
Rule-in cutoff	85	88.0 %	99.5 %

Late gestational phase (week 34+0 - delivery)

Aid in diagnosis of preeclampsia			
	sFit-1/PIGF ratio	Sensitivity	Specificity
Rule-out cutoff	33	89.6 %	73.1 %
Rule-in cutoff	110	58.2 %	95.5 %

Aid in short-term prediction of preeclampsia:

The following results were obtained in the Prospective Multicenter Study: PROGNOSIS - a multicenter, prospective, double-blind, non-interventional study evaluating the short-term prediction of preeclampsia/eclampsia/HELLP in pregnant women with suspected preeclampsia (Roche Study No. CIM RD000817).¹⁷

Sample and clinical data collection was completed at 30 sites globally from December 2010 to January 2014. 1273 pregnant women with clinical suspicion of preeclampsia between gestational weeks 24+0 days - 36+6 days were enrolled in the study and 1050 subjects were considered for the primary study objectives (500 in the development cohort and 550 in the validation cohort). One single cutoff of 38 for sFit-1/PIGF ratio was identified in the PROGNOSIS Study:

- sFit-1/PIGF ratio \leq 38: rule-out preeclampsia for 1 week
- sFit-1/PIGF ratio $>$ 38: rule-in preeclampsia within 4 weeks

The results in the following tables were obtained in the validation cohort:

Short-term prediction of preeclampsia – RULE-OUT	
sFit-1/PIGF ratio	\leq 38
NPV ^{c)} (95 % CI ^{d)})	99.3 % (97.9-99.9)

Short-term prediction of preeclampsia – RULE-OUT	
Sensitivity (95 % CI)	80.0 % (51.9-95.7)
Specificity (95 % CI)	78.3 % (74.6-81.7)

c) NPV = negative predictive value

d) CI = confidence interval

Short-term prediction of preeclampsia – RULE-IN	
sFit-1/PIGF ratio	$>$ 38
PPV ^{e)} (95 % CI)	36.7 % (28.4-45.7)
Sensitivity (95 % CI)	66.2 % (54.0-77.0)
Specificity (95 % CI)	83.1 % (79.4-86.3)

e) PPV = positive predictive value

The negative predictive value was also calculated for ruling-out preeclampsia for 2, 3 and 4 weeks after testing as a secondary outcome of the PROGNOSIS Study.¹⁸

% (95% CI)	Rule out within 1 week	Rule out within 2 weeks	Rule out within 3 weeks	Rule out within 4 weeks
NPV	99.3 97.9-99.9	97.9 96.0-99.0	95.7 93.3-97.5	94.3 91.7-96.3
Sensitivity	80.0 51.9-95.7	78.0 62.4-89.4	70.0 56.8-81.2	66.2 54.0-77.0
Specificity	78.3 74.6-81.7	81.1 77.5-84.4	82.4 78.8-85.7	83.1 79.4-86.3

sFit-1/PIGF ratio and maternal and fetal adverse outcomes:

The results of post hoc analysis of the PROGNOSIS study data demonstrated the ability of the sFit-1/PIGF ratio cutoff of 38 to predict a combined end point of preeclampsia, eclampsia, or HELLP syndrome or maternal or fetal adverse outcomes.¹⁷

The results in the following tables were obtained in the validation cohort:

Prediction of combined end point within 1 week	
NPV (95 % CI)	98.5 % (96.9-99.5)
PPV (95 % CI)	18.5 % (12.0-26.6)
Sensitivity (95 % CI)	78.6 % (59.0-91.7)
Specificity (95 % CI)	80.8 % (77.0-84.1)

Prediction of combined end point within 4 weeks	
NPV (95 % CI)	90.1 % (86.8-92.8)
PPV (95 % CI)	65.5 % (56.3-74.0)
Sensitivity (95 % CI)	65.5 % (56.3-74.0)
Specificity (95 % CI)	90.1 % (86.8-92.8)

sFit-1/PIGF ratio and time to delivery:

A secondary analysis of the PROGNOSIS study demonstrated that a sFit-1/PIGF ratio greater than 38 is associated with a shorter remaining pregnancy duration and a higher risk of preterm delivery, in early and late gestational phases and regardless of preeclampsia status.²² Women with an sFit-1/PIGF ratio greater than 38 (n = 250) had a 2.9-fold greater likelihood of imminent delivery (i.e., delivery on the day of the test) and shorter remaining time to delivery than women with an sFit-1/PIGF ratio of 38 or less, whether or not they developed preeclampsia.²²

Remaining pregnancy duration from the day of the test was 17 days (median; interquartile range (IQR): 10-26 days) for women with sFit-1/PIGF ratio $>$ 38 versus 51 days (median; IQR: 30-75 days) for women with sFit-1/PIGF ratio \leq 38.²²

The preterm birth rate in the group of women with sFit-1/PIGF ratio $>$ 38 was 71.2 % (131/184 women) versus 17.8 % in the group with sFit-1/PIGF ratio \leq 38 (118/664 women).²²

Risk assessment for early-onset preeclampsia in 1st trimester:

The following results were obtained in a study by Tsiakkas et al.²⁶

evaluating 40212 women with singleton pregnancies screened at 11-13 gestational weeks using maternal characteristics and PIGF.

	False positive rate (%)	Estimated detection rate of preeclampsia with delivery (%)	
		< 32 weeks	32+0 – 36+6 weeks
Maternal characteristics and PIGF at 11-13 weeks	5	68	44
	10	79	57

The following results were obtained in another study by Akolekar et al.²⁷, evaluating 58884 women with singleton pregnancies screened at 11-13 gestational weeks using maternal characteristics plus uterine artery pulsatility index (PI), mean arterial pressure (MAP) and PIGF.

	False positive rate (%)	Estimated detection rate of preeclampsia with delivery (%)
		< 34 weeks
Maternal characteristics, Uterine artery PI, MAP, PIGF at 11-13 weeks	5	87.4
	10	95.8

Similar results were also obtained in other studies using PIGF as one of the parameters to evaluate the risk of preeclampsia.^{28,29,30,31}

Analytical specificity

The monoclonal antibodies used are highly specific against human PIGF. The following cross-reactivities were found:

Substance	Maximum concentration tested pg/mL	Cross-reactivity %
VEGF 165	10000	0.001
VEGF/PIGF-1 heterodimer	10000	0.8
Glycosylated recombinant human PIGF-2	5000	16.8

Method comparison

a) A comparison of the Elecsys PIGF assay, [REF] 07027648190 (cobas e 801 analyzer; y), with the Elecsys PIGF assay, [REF] 05144671190 (cobas e 601 analyzer; x), gave the following correlations (pg/mL):

Number of samples measured: 135

Passing/Bablok³⁹ Linear regression
 $y = 0.982x + 0.577$ $y = 0.983x + 1.68$
 $r = 0.989$ $r = 1.000$

The sample concentrations were between 5.08 and 9505 pg/mL.

b) A comparison of the Elecsys PIGF assay, [REF] 07027648190 (cobas e 402 analyzer; y), with the Elecsys PIGF assay, [REF] 07027648190 (cobas e 801 analyzer; x), gave the following correlations (pg/mL):

Number of samples measured: 144

Passing/Bablok³⁹ Linear regression
 $y = 0.972x - 1.62$ $y = 0.998x - 7.37$
 $r = 0.986$ $r = 1.00$

The sample concentrations were between 3.71 and 9567 pg/mL.

References

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A point (period/stop) is always used in this Method Sheet as the decimal separator to mark the border between the integral and the fractional parts of a decimal numeral. Separators for thousands are not used.

Any serious incident that has occurred in relation to the device shall be reported to the manufacturer and the competent authority of the Member State in which the user and/or the patient is established.

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