Abbott AXSYM SYSTEM

en

Progesterone

REF 1L88

34-5647/R3

Read Highlighted Changes
Revised November, 2009

Progesterone

Customer Service: Contact your local representative or find country specific contact information on http://www.abbottdiagnostics.com

Package insert instructions must be carefully followed. Reliability of assay results cannot be guaranteed if there are any deviations from the instructions in this package insert.

Key to symbols used

REF	List Number	LOT	Lot Number
IVD	*In Vitro* Diagnostic Medical Device		Expiration Date
2°C 8°C	Store at 2-8°C	STANDARD CAL A	Standard Calibrator (A-F)
15°C 30°C	Store at 15-30°C	CONTROL L	Control Low, Medium, High (L, M, H)
	Consult instructions for use	REAGENT PACK	Reagent Pack
	CAUTION: Consult accompanying documents	REACTION VESSELS	Reaction Vessels
	Manufacturer	SAMPLE CUPS	Sample Cups
		MATRIX CELLS	Matrix Cells
		EC REP	Authorized Representative

See **REAGENTS** section for a full explanation of symbols used in reagent component naming.

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NAME
AxSYM Progesterone

INTENDED USE
AxSYM Progesterone is a Microparticle Enzyme Immunoassay (MEIA) for the quantitative determination of progesterone in human serum or plasma (sodium heparin and tripotassium EDTA).

SUMMARY AND EXPLANATION OF THE TEST
Progesterone (4-pregnen-3, 20-dione) is a 21-carbon steroid derived from cholesterol. Progesterone is produced primarily by the corpus luteum of the ovary in normally menstruating women and to a lesser extent by the adrenal cortex.[1] At approximately the 6th week of pregnancy, the placenta becomes the major producer of progesterone.[2,3] In the circulatory system, approximately 97-98% of the progesterone is bound to albumin or Cortisol Binding Protein.[4] Progesterone is metabolized, primarily in the liver, to pregnanediol and its water soluble sulfate and glucuronide derivatives and excreted in the urine.[5]

The major functions of progesterone are in the preparation of the uterus for implantation and the maintenance of pregnancy. During the follicular phase of the cycle, progesterone levels remain low.[1,6,7] Following the LH surge and ovulation, luteal cells in the ruptured follicle produce progesterone in response to LH. During this, the luteal phase, progesterone rises rapidly to a maximum of 10-20 ng/mL at day 5-7 following ovulation. During the luteal phase, progesterone transforms the estrogen-primed endometrium from a proliferative to a secretory state.[8] If pregnancy does not occur, progesterone levels decrease during the last four days of the cycle due to the regression of the corpus luteum.[1,6-11]

If conception occurs, the levels of progesterone are maintained at mid-luteal levels by the corpus luteum until about week six. At that time the placenta becomes the main source of progesterone and levels rise from approximately 10-50 ng/mL in the first trimester to approximately 50-280 ng/mL in the third trimester.[1,12,13]

Serum progesterone is a reliable indicator of either natural or induced ovulation because of its rapid rise following ovulation.[14-16] Disorders of ovulation, including anovulation, are relatively frequent and are responsible for infertility in approximately 15-20% of patients. Progesterone levels are abnormally low in these patients during the mid-luteal phase.

Luteal phase deficiency is a reproductive disorder associated with infertility and spontaneous abortion. It is thought to occur in 10% of infertile women.[17-19] It is believed that infertility and pregnancy wastage associated with this disorder are caused by inadequate maturation and development of the endometrium.[20] The failure of the endometrium is thought to be attributable to insufficient progesterone production by the corpus luteum. Serum progesterone levels in the luteal phase are lower than normal in women with luteal phase deficiency.[21,22] Measurement of progesterone in the first 10 weeks of gestation has been shown to be a reliable predictor and an effective tool for the diagnosis and treatment of patients with threatened abortion[23] and ectopic pregnancy. Suppressed progesterone levels (10-15 ng/mL) in the presence of detectable amounts of hCG is highly suggestive of threatened abortion or ectopic pregnancy, regardless of gestational age.[24,25]

BIOLOGICAL PRINCIPLES OF THE PROCEDURE
The AxSYM Progesterone assay is based on Microparticle Enzyme Immunoassay (MEIA) technology. The AxSYM Progesterone reagents and sample are pipetted in the following sequence:

SAMPLING CENTER

- Sample, Anti-Progesterone: Alkaline Phosphatase Conjugate and the Progesterone Buffer are combined in a well of the reaction vessel (RV), forming an antigen-antibody complex.
- The Progesterone Microparticle Reagent is added to a second well of the reaction vessel (RV).

The RV is immediately transferred into the Processing Center. Further pipetting is done in the Processing Center by the Processing Probe.

PROCESSING CENTER

- The reaction mixture is incubated. Progesterone in the sample binds to the Anti-Progesterone: Alkaline Phosphatase Conjugate.
- An aliquot of the reaction mixture is transferred to the well containing the Progesterone Microparticle Reagent. The Progesterone Microparticle Reagent binds to Anti-Progesterone: Alkaline Phosphatase Conjugate not bound to progesterone from sample, forming the final reaction mixture.
- An aliquot of the final reaction mixture is then transferred to the matrix cell. The microparticles bind irreversibly to the glass fiber matrix.
- The matrix cell is washed to remove unbound materials.
- The substrate, 4-Methylumbelliferyl Phosphate, is added to the matrix cell and the fluorescent product is measured by the MEIA optical system.

REAGENTS
READER PACK

AxSYM Progesterone Reagent Pack, 100 Tests (1L88-20)

- 1 Bottle (9.3 mL) Progesterone Buffer. Phosphate buffer with protein (bovine, murine and sheep) stabilizers. Preservative: Sodium Azide. (Reagent Bottle 1)
- 1 Bottle (9.3 mL) Anti-Progesterone (Sheep, monoclonal): Alkaline Phosphatase Conjugate in TRIS buffer with protein (bovine) stabilizers. Minimum concentration: 0.02 µg/mL. Preservative: Sodium Azide. (Reagent Bottle 2)
- 1 Bottle (12.8 mL) Progesterone Microparticles in TRIS buffer with protein (bovine and murine) stabilizers. Preservative: Sodium Azide. (Reagent Bottle 3)

CALIBRATORS

AxSYM Progesterone Standard Calibrators (1L88-01)

6 Bottles (4 mL each) of AxSYM Progesterone Standard Calibrators. Standard Calibrator A contains stripped serum (human). Standard Calibrators B through F contain progesterone in TRIS buffer with chemical stabilizers to yield the following concentrations:

Bottle	Progesterone Concentration (ng/mL)
STANDARD CAL A	0
STANDARD CAL B	0.7
STANDARD CAL C	2
STANDARD CAL D	7
STANDARD CAL E	20
STANDARD CAL F	40

Preservative: Sodium Azide.

The calibrators are matched to an Abbott internal reference standard. This internal reference standard is manufactured by gravimetric methods using Progesterone USP at each concentration level.

CONTROLS

AxSYM Progesterone Controls (1L88-10)

6 Bottles (2 bottles each level, 4 mL each) of AxSYM Progesterone Controls contain progesterone in TRIS buffer with chemical stabilizers to yield the concentration ranges below.

		Progesterone Concentration Range	
Bottle	Concentration (ng/mL)	(ng/mL)	(nmol/L)
CONTROL L	1	0.60 - 1.40	1.91 - 4.45
CONTROL M	5.5	3.83 - 7.17	12.18 - 22.80
CONTROL H	22	14.95 - 29.05	47.54 - 92.38

Preservative: Sodium Azide.

The AxSYM Progesterone default result unit is ng/mL. An alternate unit (nmol/L) may be selected for reporting results (Assay Parameter 45). The conversion factor used by the AxSYM System is 3.18.

SPECIMEN DILUENT

AxSYM Progesterone Specimen Diluent (1L88-50)

SPECIMEN DILUENT 1 Bottle (10 mL) AxSYM Progesterone Specimen Diluent contains stripped serum (human). Preservative: Sodium Azide.

OTHER REAGENTS

Solution 1 (MUP) (8A47-04)

SOLUTION 1 MUP 4 Bottles (230 mL each) Solution 1 (MUP) contain 4-Methylumbelliferyl Phosphate, 1.2 mM, in AMP buffer. Preservative: Sodium Azide.

Solution 3 (Matrix Cell Wash) (8A81-04)

SOLUTION 3 MATRIX CELL WASH 4 Bottles (1000 mL each) Solution 3 (Matrix Cell Wash) contain 0.3M Sodium Chloride in TRIS Buffer. Preservatives: Sodium Azide and Antimicrobial Agents.

Solution 4 (Line Diluent) (8A46)

SOLUTION 4 LINE DILUENT 1 Bottle (10 L) Solution 4 (Line Diluent) contains 0.1M Phosphate Buffer. Preservatives: Sodium Azide and Antimicrobial Agent.

AxSYM Probe Cleaning Solution (9A35-05)

PROBE CLEANING SOLUTION 4 Bottles (110 mL each) AxSYM Probe Cleaning Solution contain 2% Tetraethylammonium Hydroxide (TEAH).

WARNINGS AND PRECAUTIONS

- IVD
- **For *In Vitro* Diagnostic Use**

Package insert instructions must be carefully followed. Reliability of assay results cannot be guaranteed if there are any deviations from the instructions in this package insert.

SAFETY PRECAUTIONS

- ⚠ **CAUTION:** This product contains human sourced and/or potentially infectious components. Refer to the **REAGENTS** section of this package insert. No known test method can offer complete assurance that products derived from human sources or inactivated microorganisms will not transmit infection. Therefore, all human sourced materials should be considered potentially infectious. It is recommended that these reagents and human specimens be handled in accordance with the OSHA Standard on Bloodborne Pathogens[26]. Biosafety Level 2[27] or other appropriate biosafety practices[28,33] should be used for materials that contain or are suspected of containing infectious agents.
- The stripped serum (human) used in Standard Calibrator A and the Specimen Diluent is nonreactive for HBsAg, HIV-1 RNA or HIV-1 Ag, anti-HCV, and anti-HIV-1/HIV-2.
- This product contains sodium azide; for a specific listing, refer to the **REAGENTS** section. Contact with acids liberates very toxic gas. This material and its container must be disposed of in a safe way.
- For product not classified as dangerous per European Directive 1999/45/EC - Safety data sheet available for professional user on request.

HANDLING PRECAUTIONS

- **AxSYM Progesterone reagents are susceptible to bubbles/foaming and require inspection and removal of bubbles before loading.** Refer to the AxSYM System Operations Manual, Section 9: Service and Maintenance, Subsection: Daily Maintenance.
- **Do not use Solution 1 (MUP) beyond the expiration date or a maximum of 14 days on-board the AxSYM System. When loading new Solution 1 (MUP), it is important to immediately tighten the instrument cap for MUP to minimize exposure to air. Prolonged exposure of MUP to air may compromise performance.**
- Do not use Reagent Pack beyond the expiration date or a maximum of 224 cumulative hours on-board the AxSYM System.
- **The AxSYM Progesterone Calibrators and Controls have been shown to lose progesterone to certain plastics.** To prevent concentration alteration, do not redispense (including wetting of pipette tip) solution from pipette to calibrator or control container. Dispense the required amount of calibrator or control solution to the sample cup and discard any solution remaining in the pipette tip along with the tip. Serum or plasma samples have not exhibited progesterone loss to plastic.
- Do not mix reagents from different reagent packs.
  Refer to the AxSYM System Operations Manual, Sections 7 and 8, for a more detailed discussion of the safety and handling precautions during system operation.

STORAGE INSTRUCTIONS

The AxSYM Progesterone Reagent Pack, Calibrators, Controls and Specimen Diluent must be stored at 2-8˚C (do not freeze). They may be used immediately after removing them from the refrigerator. Calibrators, Controls and Specimen Diluent should be returned to 2-8˚C storage immediately after use.

Reagents are stable until the expiration date when stored and handled as directed.

The AxSYM Progesterone Reagent Pack may be on-board the AxSYM System for a maximum of 224 cumulative hours; for example, 28 eight hour shifts. Recalibration may be required to obtain maximum on-board reagent stability. More frequent use of controls may be required to monitor reagent performance within the same lot.

Refer to the AxSYM System Operations Manual, Sections 2, 5, and Appendices, for further information on tracking on-board time.

Solution 1 (MUP) must be stored at 2-8˚C (do not freeze). It may be used immediately after removing it from the refrigerator. MUP may be on-board the AxSYM System for a maximum of 14 days. After 14 days, it must be discarded.

The AxSYM Probe Cleaning Solution, Solution 3 (Matrix Cell Wash) and Solution 4 (Line Diluent) must be stored at 15-30˚C.

INSTRUMENT PROCEDURE

Assay File Installation

The AxSYM Progesterone assay file must be installed on the AxSYM System from the following software disk, prior to performing Progesterone assays:

- 3D51-05, or higher (224 hours on-board Stability)

Refer to the AxSYM System Operations Manual, Section 2: Installation Procedures and Special Requirements, for proper installation procedures.

AxSYM Progesterone ASSAY PARAMETERS

The default values for the assay parameters used for the AxSYM Progesterone assay are listed below. Assay parameters that can be edited contain a (>) symbol. These parameters can be displayed and edited according to the procedure in the AxSYM System Operations Manual, Section 2: Installation Procedures and Special Requirements. In order to obtain values for the parameters with an asterisk (*), review the specific Assay Parameter screen. Press PRINT to print the assay parameters.

		Assay Parameters
	1	Long Assay Name (English): PROGESTERONE
	6	Abbrev Assay Name (English): PROG
	11	Assay Number: 92
	12	Assay Version: *
	13	Calibration Version: *
	14	Assay File Revision: *
	15	Assay Enabled > ON
	17	Assay Type: MEIA
	18	Standard Cal Reps > 2
**	19	Master Cal Reps > 2
	21	Cal A Concentration: 0.00
	22	Cal B Concentration: 0.70
	23	Cal C Concentration: 2.00
	24	Cal D Concentration: 7.00
	25	Cal E Concentration: 20.00
	26	Cal F Concentration: 40.00
**	27	Master Calibrator 1 Concentration: 0.00
**	28	Master Calibrator 2 Concentration: 7.00
	43	Default Dilution Protocol > UNDILUTED
	44	Default Calibration Method > Standard Cal
	45	Selected Result Concentration Units > ng/mL
	46	Selected Result Decimal Places > 2
	64	Max Intercept-Max MUP intercept: *
	65	Min Intercept-Min MUP intercept: *
	66	Upper limit for NRMSE for low rates: *
	67	Upper limit for NRMSE for high rates: *
	68	Max Rate-Max rate used to check Min MUP intercept: *
	69	Min Rate-Min rate cutoff for NRMSE and Corr. Coef.: *
	70	Min correlation coefficient for low rates: *
	71	Min correlation coefficient for high rates: *
	72	MUP T Delay-Time delay following MUP: *
	73	Low Limit-Normal/Therapeutic Range lower limit >*
	74	High Limit-Normal/Therapeutic Range upper limit >*
	80	Interpretation Option to use >*
	91	Low Range Undiluted: *
	92	High Range Undiluted: *

NOTE: Parameter 45 can be edited to the alternate result unit nmol/L.

NOTE: Parameters 43 and 80 are not editable.

** NOTE: AxSYM Progesterone Master calibration operation is not available.

Refer to the AxSYM System Operations Manual for a detailed description of Instrument Procedures. For details on Automatic Sample Retest Configuration, refer to the AxSYM System Operations Manual, Section 2: Installation Procedures and Special Requirements.

SPECIMEN COLLECTION AND PREPARATION FOR ANALYSIS

- Serum (including serum collected in serum separator tubes) or plasma collected in sodium heparin or tripotassium EDTA may be used in the AxSYM Progesterone assay. Other anticoagulants have not been tested with the AxSYM Progesterone assay. Follow the manufacturer's processing instructions for serum or plasma collection tubes.
- The AxSYM System does not provide the capability to verify sample type. It is the responsibility of the operator to verify the correct specimen type(s) is(are) used in the AxSYM Progesterone assay.
- Ensure that complete clot formation has taken place prior to centrifugation. Some samples, especially those from patients receiving anticoagulant or thrombolytic therapy, may exhibit increased clotting time. If the sample is centrifuged before a complete clot forms, the presence of fibrin may cause erroneous results.
- For optimal results, samples should be free of fibrin, red blood cells or other particulate matter.
- If testing will be delayed more than 24 hours, serum or plasma should be separated from the clot or red blood cells. If using serum separator tubes, remove serum from the separator within 48 hours. Samples may be stored for up to 25 days at 2-8°C prior to being tested. If testing will be delayed more than 25 days, samples should be frozen at -10°C or colder. Samples stored frozen at -10°C or colder for 6 months showed no performance difference.
- Patient samples should be mixed and centrifuged after any freeze-thaw cycle or to remove red blood cells or particulate matter.
- Multiple freeze-thaw cycles should be avoided. Samples must be mixed **THOROUGHLY** after thawing, by LOW speed vortexing or by gently inverting, and centrifuged prior to use to remove particulate matter and to ensure consistency in the results.
- AxSYM Progesterone Calibrators and Controls should be mixed by gentle inversion prior to use.
- To minimize the effects of evaporation, all samples (patient samples, controls and calibrators) should be tested within 3 hours of being placed on-board the AxSYM System. Refer to the AxSYM System Operations Manual, Section 5: Operating Instructions, Subsection: Loading Samples, Cals and Controls, for a more detailed discussion of on-board sample storage constraints.
- Inspect all samples for bubbles. Remove bubbles prior to analysis.
- When shipped, samples must be packaged and labeled in compliance with applicable federal and international regulations covering the transport of clinical samples and etiologic agents.

SAMPLE VOLUME

The sample volume required to perform a single undiluted Progesterone test on the AxSYM System varies depending on the type of sample container used. For sample cups, a ROUTINE test requires 150 µL and a STAT test requires 131 µL. For every additional Progesterone test performed (ROUTINE or STAT) from the same container, an additional 81 µL of sample is required.

The sample cup minimum volumes for both STAT and ROUTINE tests are calculated by the AxSYM System. They are displayed on the Order screen at the time the test(s) is(are) ordered, and printed in the Orderlist Report. When using Host Order Query, the Order screen information and the Orderlist Report are not available. Refer to the AxSYM System Operations Manual, Section 5: Operating Instructions, Subsection: Ordering Patient Samples, for a description of the Host Order Query option.

If the assay is configured for auto retest, the additional sample volume needed for the retest will not be displayed on the Order screen at the time the test(s) is(are) ordered. Therefore, the total sample volume should include an additional 81 µL of sample.

Refer to the AxSYM System Operations Manual, Section 5: Operating Instructions, Subsection: Loading Samples, Cals and Controls, for sample volume requirements in primary or aliquot tubes and calibrator/control requirements for multiple reagent lots.

AxSYM PROGESTERONE PROCEDURE

Materials Provided

- 1L88-20 AxSYM Progesterone Reagent Kit, containing:
  AxSYM Progesterone **REAGENT PACK**

Materials Required But Not Provided

- AxSYM System
- 1L88-01 AxSYM Progesterone **STANDARD CALIBRATORS**
- 1L88-10 AxSYM Progesterone **CONTROLS**
- 1L88-50 AxSYM Progesterone **SPECIMEN DILUENT**
- 8A47-04 **SOLUTION 1 MUP**
- 8A81-04 **SOLUTION 3 MATRIX CELL WASH**
- 8A46 **SOLUTION 4 LINE DILUENT**
- 9A35-05 AxSYM **PROBE CLEANING SOLUTION**
- 8A76-01 **SAMPLE CUPS**
- 8A75-11 **REACTION VESSELS**

CAUTION:

- When manually dispensing sample into sample cups, verify that dispensing equipment does not introduce cross contamination and delivers the specified sample volume.
- For optimal performance, it is important to follow the routine maintenance procedures defined in the AxSYM System Operations Manual, Section 9: Service and Maintenance. If your laboratory requires more frequent maintenance, follow those procedures.

Assay Procedure

Prior to ordering tests, confirm that the System inventory of matrix cells, bulk solutions, and waste levels are acceptable.

The Orderlist Report contains sample placement information and sample cup volume requirements for all ordered tests. It is recommended that this report be referenced when loading samples into sample segments. When using Host Order Query, the Orderlist Report is not available. Refer to the AxSYM System Operations Manual, Section 5: Operating Instructions, Subsection: Ordering Patient Samples, for a description of the Host Order Query Option.

CAUTION: When operating the AxSYM System, always observe the following:

- The System status must be WARMING, PAUSED, READY or STOPPED before adding or removing sample segments, reagent packs or reaction vessels (RV's).
- Do not open the Interior Waste Door or the AxSYM Processing Center Cover while any test is in process. If opened, all processing will stop. Tests in process will be terminated and must be repeated.
- When testing is completed, it is recommended that samples and the AxSYM Progesterone Reagent Pack are removed from the Sampling Center to maximize the on-board reagent pack use. Store at 2-8°C.

SAMPLE DILUTION PROCEDURES

Automated Dilution Protocol

Progesterone samples cannot be diluted automatically on the System.

Manual Dilution Protocol

Patient samples with progesterone concentrations reported as greater than 40 ng/mL may be diluted using a suggested manual dilution of 1:20. Add 50 µL of the patient sample to 950 µL of the AxSYM Progesterone Specimen Diluent (1L88-50). The dilution should be performed so that the diluted test results read greater than the sensitivity of the assay. The concentration reported by the AxSYM System must be multiplied by the manual dilution factor to obtain the final sample concentration.

Final Sample Concentration =

Reported Concentration x Manual Dilution Factor

Manual Dilution Factor =

$$\frac{\text{(Volume of Sample + Volume of Dilution Reagent)}}{\text{(Volume of Sample)}}$$

QUALITY CONTROL PROCEDURES

CALIBRATION

The AxSYM Progesterone assay must be calibrated using a Standard Calibration (6-point) procedure.

Standard Calibration

To perform an AxSYM Progesterone Standard Calibration, test the Standard Calibrators A, B, C, D, E, and F in duplicate. A single sample of all levels of progesterone controls must be tested as a means of evaluating the assay calibration.

Once the AxSYM Progesterone calibration is accepted and stored, all subsequent samples may be tested without further calibration unless:

- A reagent pack with a new lot number is used.
- Controls are out of range.

Refer to the AxSYM System Operations Manual, Section 6: Calibration Procedures for:

- Setting up an assay calibration
- When recalibration may be necessary
- Calibration verification

The AxSYM System verifies that the results of an assay calibration meet the specifications assigned to selected validity parameters. An error message occurs when the calibration fails to meet a specification. Refer to the AxSYM System Operations Manual, Section 10: Troubleshooting and Diagnostics, for an explanation of the corrective actions for the error code. Refer to the AxSYM System Operations Manual, Appendix E, for an explanation of the calibration validity parameters that may be used by the AxSYM System.

QUALITY CONTROL

The recommended control requirement for an AxSYM Progesterone assay is a single sample of all progesterone control levels tested once every 24 hours each day of use. Controls may be placed in any position in the Sample Carousel.

If the quality control procedures in your laboratory require more frequent use of controls to verify test results, follow those procedures.

To achieve maximum on-board reagent stability, more frequent use of controls may be required to monitor reagent performance within the same lot.

Ensure that assay control values are within the concentration ranges specified in the package insert. Refer to the **REAGENTS**, CONTROLS section of this package insert for AxSYM Progesterone Control ranges.

INDICATIONS OF INSTABILITY OR DETERIORATION OF REAGENTS

When a progesterone control value is out of the specified range, it may indicate deterioration of the reagents or errors in technique. Associated test results may be invalid and require retesting. Assay recalibration may be indicated. Refer to the AxSYM System Operations Manual, Section 10: Troubleshooting and Diagnostics, Subsection: Observed Problems, for further troubleshooting information.

The AxSYM System has the capability to generate a Levey-Jennings plot of each assay's quality control performance. Refer to the AxSYM System Operations Manual, Section 5: Operating Instructions, Subsection: Quality Control. At the discretion of the laboratory, selected quality control rules may be applied to the quality control data.

Fluorescence Background Acceptance Criteria

Quality Control with regards to the MUP substrate blank is automatically determined by the instrument and checked under Assay Parameter 64 Max Intercept-Max MUP intercept each time a test result is calculated. If the MUP intercept value is greater than the maximum allowable value, the result is invalid. The test request will be moved to the Exceptions List where it will appear with the message "1064 Invalid test result, intercept too high" and the calculated intercept value. Refer to the AxSYM System Operations Manual, Section 10: Troubleshooting and Diagnostics, when this error message is obtained.

Refer to the AxSYM System Operations Manual, Section 2: Installation Procedures and Special Requirements, for further information on this parameter.

RESULTS

AxSYM Progesterone utilizes a 4-parameter logistic data reduction method (4PLC) to generate a Standard Calibration curve. Refer to the AxSYM System Operations Manual, Appendix F, for further information.

Alternate Result Unit

The default result unit for AxSYM Progesterone is ng/mL. When selecting the alternate result unit, nmol/L, the conversion factor used by the AxSYM System is 3.18.

Flags

Some results may contain information in the Flags field. For a description of the flags that may appear in this field, refer to the AxSYM System Operations Manual, Section 1: Use or Function.

LIMITATIONS OF THE PROCEDURE

- If the progesterone level is inconsistent with clinical evidence, additional testing is suggested to confirm the result.
- For diagnostic purposes, the progesterone results should be used in conjunction with other data; e.g., symptoms, results of other fertility and pregnancy tests (e.g. LH, FSH, Prolactin, β-hCG), clinical impressions, etc.
- Specimens from patients who have received preparations of mouse monoclonal antibodies for diagnosis or therapy may contain human anti-mouse antibodies (HAMA). Such specimens may show either falsely elevated or depressed values when tested with assay kits which employ mouse monoclonal antibodies.[29,30] These specimens should not be assayed with the AxSYM Progesterone assay.
- Refer to the **SPECIMEN COLLECTION AND PREPARATION FOR ANALYSIS** section in this package insert.

EXPECTED VALUES

Specimens were drawn from 77 normal males, 30 post menopausal females, daily from 30 normal cycling females, and from 25 females each in the first, second, or third trimester of pregnancy. For this study, the follicular phase was defined as the period of time from 10 days to 5 days prior to the day in which LH and FSH were most elevated. The luteal phase was defined as the period of time from 4 days to 10 days after the day on which LH and FSH were most elevated. The mid-luteal phase was defined as the period of time from 5 days to 9 days after the day on which LH and FSH were most elevated.[31] A summary of the data, using the AxSYM Progesterone assay, for the expected ranges is presented in the following table. It is recommended that each laboratory establish its own range.

		Progesterone Value (ng/mL)		
	n	5th to 95th Percentile	Median	Range
Normal Menstruating Females:				
Follicular Phase	30	0.38 - 0.94	0.55	0.27 - 2.61
Luteal Phase	30	7.77 - 27.01	15.55	3.28 - 38.63
Mid-Luteal Phase	30	9.48 - 27.30	16.60	5.25 - 38.63
Post Menopausal Females:	30	< 0.2 - 0.49	0.34	< 0.2 - 0.82
Pregnant Females:				
First Trimester	25	12.36 - 80.60	22.13	12.26 - 81.80
Second Trimester	25	19.59 - 77.00	35.46	11.11 - 81.40
Third Trimester	25	63.80 - 246.40	103.80	39.30 - 387.80
Males:	77	< 0.2 - 1.31	< 0.2	< 0.2 - 3.37

SPECIFIC PERFORMANCE CHARACTERISTICS

PRECISION

The AxSYM Progesterone assay is designed to have a total precision of ≤ 0.15 SD (Low), and a total CV of ≤ 8.0% (Medium and High). A study based on guidance from (NCCLS) document EP5-T2[32] was performed for the AxSYM Progesterone assay. A four member panel was assayed, using a single lot of reagents and a single calibration, in replicates of 2 at two separate times per day for twenty days. Panel member 1 is human serum based, and panel members 2, 3, and 4 are TRIS buffer with chemical stabilizer based. Data from this study are summarized in the following tables. The data in the following tables are representative data; results in individual laboratories may vary from these data.

PANEL MEMBER 1

		Mean Conc. Value	Within Run		Between Run		Between Day		Total	
Instrument	n	(ng/mL)	SD	CV(%)	SD	CV(%)	SD	CV(%)	SD	CV(%)
1	80	0.60	0.06	9.66	0.02	3.91	0.03	5.34	0.07	11.71
2	80	0.54	0.04	7.06	0.02	2.86	0.03	5.67	0.05	9.49
3	80	0.56	0.04	6.96	0.01	1.14	0.03	5.70	0.05	9.07
4	80	0.54	0.05	9.58	0.02	2.85	0.00	0.00	0.05	9.99
5	80	0.69	0.05	6.67	0.04	5.87	0.00	0.00	0.06	8.88

PANEL MEMBER 2

		Mean Conc. Value	Within Run		Between Run		Between Day		Total	
Instrument	n	(ng/mL)	SD	CV(%)	SD	CV(%)	SD	CV(%)	SD	CV(%)
1	80	1.05	0.05	5.17	0.02	1.79	0.03	3.07	0.07	6.27
2	80	0.99	0.05	5.48	0.00	0.00	0.05	4.86	0.07	7.33
3	80	1.00	0.06	5.60	0.00	0.00	0.03	3.16	0.06	6.43
4	80	0.97	0.04	4.28	0.05	5.06	0.00	0.00	0.06	6.63
5	80	1.15	0.06	4.93	0.00	0.00	0.04	3.26	0.07	5.91

PANEL MEMBER 3

Instrument	n	Mean Conc. Value (ng/mL)	Within Run SD	Within Run CV(%)	Between Run SD	Between Run CV(%)	Between Day SD	Between Day CV(%)	Total SD	Total CV(%)
1	80	5.40	0.18	3.33	0.00	0.00	0.20	3.77	0.27	5.03
2	80	5.58	0.16	2.82	0.12	2.22	0.25	4.54	0.32	5.79
3	80	5.55	0.17	3.02	0.08	1.45	0.08	1.42	0.20	3.64
4	80	5.66	0.17	2.97	0.06	0.99	0.08	1.36	0.19	3.41
5	80	6.34	0.18	2.84	0.05	0.71	0.15	2.39	0.24	3.78

PANEL MEMBER 4

Instrument	n	Mean Conc. Value (ng/mL)	Within Run SD	Within Run CV(%)	Between Run SD	Between Run CV(%)	Between Day SD	Between Day CV(%)	Total SD	Total CV(%)
1	80	21.68	1.01	4.65	0.31	1.43	1.04	4.81	1.48	6.84
2	80	21.08	0.87	4.14	0.36	1.72	0.00	0.00	0.95	4.48
3	80	21.33	0.86	4.03	0.58	2.70	0.46	2.17	1.13	5.31
4	80	21.90	0.80	3.65	0.57	2.59	0.19	0.88	1.00	4.56
5	80	23.18	1.04	4.48	0.64	2.78	0.47	2.04	1.31	5.66

RECOVERY

The AxSYM Progesterone assay is designed to have an average recovery of 90-110% when analyzing specimens spiked with known amounts of progesterone. Known concentrations of progesterone were added to 3 normal human serum samples. The concentration of progesterone was determined using the AxSYM Progesterone Assay and the resulting percent recovery was calculated.*

Recovery of Progesterone

Sample	Endogenous Level (ng/mL)	Progesterone Added (ng/mL)	Progesterone Obtained (ng/mL)	Recovery** (%)
1	7.60	4.84	12.47	100.6
2	4.38	9.72	13.97	98.7
3	4.38	9.72	14.21	101.1

Average Percent Recovery: 100.1%

* Representative data; results in individual laboratories may vary from these data.

** %Recovery =

$$\frac{\text{Progesterone Value Obtained (ng/mL) - Endogenous Level (ng/mL)}}{\text{Progesterone Added (ng/mL)}} \times 100$$

SENSITIVITY

The AxSYM Progesterone assay is designed to have an Analytical Sensitivity of ≤ 0.2 ng/mL. This sensitivity is defined as the concentration at two standard deviations from the AxSYM Progesterone Calibrator A (0 ng/mL) and represents the lowest concentration of progesterone that can be distinguished from zero.

SPECIFICITY

The AxSYM Progesterone assay is designed to have a Specificity of < 5%. The AxSYM Progesterone Calibrator A was spiked to 1000 ng/mL with the test compound (100 µg/mL for DHEAS) and assayed for progesterone.

The percent cross-reactivity of the compounds is listed below for the AxSYM Progesterone assay.

(ND = None Detected)

Compound	% Cross reactivity
Aldosterone	ND
Allopregnanediol	ND
Androstenediol	ND
Androstenedione	ND
Clomiphene Citrate	ND
Corticosterone	2.1
Cortisol	ND
Danazol	ND
11-Deoxycorticosterone	1.3
11-Deoxycortisol	ND
DHEA	ND
DHEA-S	ND
Dihydrotestosterone	ND
20α-Hydroxyprogesterone	0.4
20β-Hydroxyprogesterone	2.2
Estradiol (17β)	ND
Estriol	ND
Estrone	ND
Ethynyl-Estradiol	ND
17-Hydroxypregnenolone	ND
17-Hydroxyprogesterone	0.8
Medroxyprogesterone	ND
19-Nor-4-androsten-3,17-dione	ND
19-Nortestosterone	ND
5β-Pregnane	ND
5α-Pregnan-3,20-dione	6.3
5β-Pregnan-3α,20α-diol	ND
5α-Pregnan-3α-ol-20-one	1.7
5α-Pregnan-3β-ol-20-one	ND
5-Pregnan-3-ol-20-one	3.2
Pregnanolone	1.5
Pregnenolone	0.2
Pregnenolone-3-sulfate	0.5
Spironolactone	ND
Testosterone	ND

Drugs	% Cross reactivity
Ethisterone	ND
Ethynodiol diacetate	ND
Norethindrone	ND
Norgestrel	ND
Normethandrone	ND
Methylprednisolone	ND
Medroxyprogesterone Acetate	ND
Norethindrone Acetate	ND

INTERFERENCE

Interference from bilirubin, hemoglobin, and triglycerides was studied in the AxSYM Progesterone assay. A human serum specimen was spiked with the interferant and assayed for progesterone. The AxSYM Progesterone assay demonstrated the interference stated in the following table.

Interfering Substances	Interfering Substances Concentration	Sample Progesterone Concentration (ng/mL)	% Interference
Bilirubin	15 mg/dL	6.53	<5
Hemoglobin	1 g/dL	6.25	<5
Triglycerides	2000 mg/dL	34.5	<10

ACCURACY BY CORRELATION

The AxSYM Progesterone assay is designed to have a slope of 0.8 to 1.2 and a correlation coefficient (r) of ≥ 0.95 when compared to DPC RIA. Additionally, the AxSYM Progesterone assay was compared to a commercially available diagnostic kit. The results of the specimen testing are shown in the following table. *

Abbott AxSYM Progesterone vs. ACS: 180 Progesterone

Method	Number of Observations	Intercept	Slope	Correlation Coefficient
Least Squares Linear Regression	301	1.20	0.88	0.95
Passing-Bablok Linear Regression**	301	0.16	0.94	0.95

In this evaluation, serum samples tested ranged from 0.20 to 35.17 ng/mL by AxSYM Progesterone.

* Representative data; results in individual laboratories may vary from these data.

** A Linear Regression Method with no special assumptions regarding the distribution of the samples and the measurement errors.[34]

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