



ichroma™ FSH

INTENDED USE

ichroma™ FSH is a fluorescence Immunoassay (FIA) for the quantitative determination of follicle stimulating hormone(FSH) in human serum/plasma. It is useful as an aid in management and monitoring of concentration of FSH.

For *in vitro* diagnostic use only.

INTRODUCTION

Follicle-stimulating hormone (FSH) is synthesized and secreted by gonadotrophs of the anterior pituitary gland. The alpha subunits of LH, FSH, TSH, and hCG are identical, and contain 92 amino acids. FSH has a beta subunit of 118 amino acids (FSHB), which confers its specific biologic action and is responsible for interaction with the FSH-receptor. FSH regulates the development, growth, pubertal maturation, and reproductive processes of the body. FSH and Luteinizing hormone (LH) act synergistically in reproduction.

The most common reason for high serum FSH concentration is in a female who is undergoing or has recently undergone menopause. High levels of Follicle-Stimulating Hormone indicate that the normal restricting feedback from the gonad is absent, leading to an unrestricted pituitary FSH production. If high FSH levels occur during the reproductive years, it is abnormal. Conditions with high FSH levels include: Premature menopause also known as Premature Ovarian Failure, Poor ovarian reserve also known as Premature Ovarian Aging, Gonadal digenesis, Turner syndrome, Castration, Swyer syndrome, Certain forms of Congenital adrenal hyperplasia(CAH), Testicular failure.

Most of these conditions are associated with subfertility and/or infertility. Therefore high FSH levels are an indication of subfertility and/or infertility.

PRINCIPLE

The test uses a sandwich immunodetection method; the detector antibody in buffer binds to antigen in sample, forming antigen-antibody complexes, and migrates onto nitrocellulose matrix to be captured by the other immobilized-antibody on test strip.

The more antigen in sample forms the more antigen-antibody complex and leads to stronger intensity of fluorescence signal on detector antibody, which is processed by instrument for ichroma™ tests to show FSH concentration in sample.

COMPONENTS

ichroma™ FSH consists of 'Test cartridges', 'Detection Buffer Tubes' and an 'ID chip'.

- The test cartridge contains a test strip, the membrane which has anti human FSH at the test line, while chicken IgY at the control line.
- Each test cartridge is individually sealed in an aluminum foil pouch containing a desiccant. 25 sealed test cartridges are packed in a box which also contains an ID chip.
- The detection buffer contains anti human FSH-fluorescence conjugate, anti chicken IgY-fluorescence conjugate, bovine serum albumin (BSA) as a stabilizer and sodium azide as a preservative in phosphate buffered saline.
- The detection buffer is pre-dispensed in a tube. 25 detection buffer tubes are packaged in a Box and further packed in a Styrofoam box with ice-pack for the shipment.

WARNINGS AND PRECAUTIONS

- For *in vitro* diagnostic use only.
- Carefully follow the instructions and procedures described in this 'Instruction for use'.
- Use only fresh samples and avoid direct sunlight.
- Lot numbers of all the test components (test cartridge, ID chip and detection buffer) must match each other.
- Do not interchange the test components between different lots or use the test components after the expiration date, either of which might yield misleading of test result(s).
- Do not reuse. A detection buffer tube should be used for processing one sample only. So should a test cartridge.
- The test cartridge should remain sealed in its original pouch before use. Do not use the test cartridge, if is damaged or already opened.
- Frozen sample should be thawed only once. For shipping, samples must be packed in accordance with the regulations. Sample with severe hemolytic and hyperlipidemia cannot be used and should be recollected.
- Just before use, allow the test cartridge, detection buffer and sample to be at room temperature for approximately 30 minutes.
- **ichroma™ FSH** as well as the Instrument for ichroma™ tests should be used away from vibration and/or magnetic field. During normal usage, it can be noted that Instrument for ichroma™ tests may produce minor vibration.
- Used detection buffer tubes, pipette tips and test cartridges should be handled carefully and discarded by an appropriate method in accordance with relevant local regulations.
- An exposure to larger quantities of sodium azide may cause certain health issues like convulsions, low blood pressure and heart rate, loss of consciousness, lung injury and respiratory failure.
- **ichroma™ FSH** will provide accurate and reliable results subject to the following conditions.
 - Use **ichroma™ FSH** should be used only in conjunction with instrument for ichroma™ tests.
 - Any anticoagulants other than EDTA, sodium citrate, heparin sodium should be avoided.

STORAGE AND STABILITY

- The test cartridge is stable for 20 months (while sealed in an aluminum foil pouch) if stored at 4 - 30°C.
- The detection buffer pre-dispensed in a tube is stable for 20 months if stored at 2 - 8°C.
- After the test cartridge pouch is opened, the test should be performed immediately.

LIMITATION OF THE TEST SYSTEM

- The test may yield false positive result(s) due to the cross-reactions and/or non-specific adhesion of certain sample components to the capture/detector antibodies.
- The test may yield false negative result. The non-responsiveness of the antigen to the antibodies is most common where the epitope is masked by some unknown components, so as not to be detected or captured by the antibodies. The instability or degradation of the antigen with time and/or temperature may cause the false negative as it makes antigen unrecognizable by the antibodies.
- Other factors may interfere with the test and cause erroneous results, such as technical/procedural errors, degradation of the test components/reagents or presence of interfering substances in the test samples.
- Any clinical diagnosis based on the test result must be supported by a comprehensive judgment of the concerned physician including clinical symptoms and other relevant test results.

MATERIALS SUPPLIED

REF CFPC-35

Components of **ichroma™ FSH**

- Test Cartridge Box:
 - Test Cartridges 25
 - ID Chip 1
 - Instruction For Use 1
- Box containing Detection Buffer Tubes
 - Detection Buffer tubes 25

MATERIALS REQUIRED BUT SUPPLIED ON DEMAND

Following items can be purchased separately from **ichroma™ FSH**. Please contact our sales division for more information.

- Instrument for **ichroma™** tests
 - **ichroma™ Reader** REF FR203
 - **ichroma™ D** REF 13303
 - **ichroma™ Printer** REF FPRR007
- **ichroma™ Universal Control I** REF CFPO-35

SAMPLE COLLECTION AND PROCESSING

The sample type for **ichroma™ FSH** is human serum / plasma.

- It is recommended to test the sample within 24 hours after collection.
- The serum or plasma should be separated from the clot by centrifugation within 3 hours after the collection of whole blood. If longer storage is required, e.g. if the test could not be performed within 24 hours, serum or plasma should be immediately frozen below -20°C. The freezing storage of sample up to 3 months does not affect the quality of results.
- Once the sample was frozen, it should be used one time only for test, because repeated freezing and thawing can result in the change of test values.

TEST SETUP

- Check the contents of **ichroma™ FSH**: Sealed Test Cartridge, Detection Buffer Tubes and ID Chip.
- Ensure that the lot number of the test cartridge matches that of the ID chip as well as the detection buffer.
- Keep the sealed test cartridge (if stored in refrigerator) and the detection buffer tube at room temperature for at least 30 minutes just prior to the test. Place the test cartridge on a clean, dust-free and flat surface.
- Turn on the Instrument for **ichroma™** tests.
- Insert the ID Chip into the ID chip port of the Instrument for **ichroma™** tests.
- Press the 'Select' button on the Instrument for **ichroma™** tests. (Please refer to the 'Instrument for **ichroma™** tests Operation Manual' for complete information and operating instructions.)

TEST PROCEDURE

- 1) Transfer 150 µL (Human serum / plasma / control) of sample using a transfer pipette to a tube containing the detection buffer.
- 2) Close the lid of the detection buffer tube and mix the sample thoroughly by shaking it about 10 times.
- 3) Pipette out 75 µL of a sample mixture and load it into the sample well on the test cartridge.
- 4) Leave the sample-loaded test cartridge at room temperature for 15 minutes.
- 5) To scan the sample-loaded cartridge, insert it into the cartridge holder of the Instrument for **ichroma™** tests. Ensure proper orientation of the cartridge before pushing it all the way inside the cartridge holder. An arrow has been marked on the cartridge especially for this purpose.
- 6) Press 'Select' button on the Instrument for **ichroma™** tests to start the scanning process.
- 7) Instrument for **ichroma™** tests will start scanning the sample-loaded cartridge immediately.
- 8) Read the test result on the display screen of the Instrument for **ichroma™** tests.

INTERPRETATION OF TEST RESULT

- Instrument for **ichroma™** tests calculates the test result automatically and displays FSH concentration of the test sample in terms of mIU/mL.

■ The cut-off (reference range)

	Stage	Range (mIU/mL)
Females	Follicular Phase	3 - 11
	Mid-Cycle	6 - 21
	Luteal Phase	1 - 9
	Postmenopausal	22 - 153
Males		1 - 11

- Working range : 1~100.0 mIU/mL

QUALITY CONTROL

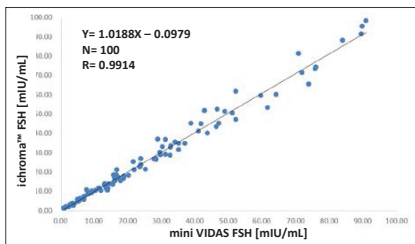
- Quality control tests are a part of the good testing practice to confirm the expected results and validity of the assay and should be performed at regular intervals.
- The control tests should be performed immediately after opening a new test lot to ensure the test performance is not altered.
- Quality control tests should also be performed whenever there is any question concerning the validity of the test results.
- Control materials are not provided with **ichroma™ FSH**. For more information regarding obtaining the control materials, contact [Boditech Med Inc.'s Sales Division for assistance](#). (Please refer to the instruction for use of control material.)

PERFORMANCE CHARACTERISTICS

- **Specificity:** There, in test samples, are biomolecules such as D-glucose, bilirubin, hemoglobin, cholesterol, L-ascorbic acid, Triglyceride mixture and disease related makers such as hCG, LH, TSH, PRL were added to the test sample(s) at concentrations much higher than their normal physiological levels in blood. **ichroma™ FSH** test results did not show any significant cross-reactivity with these biomolecules.
- **Precision:** The intra-assay precision was calculated by one evaluator, who tested different concentration of control standard twenty times each with three different lots of **ichroma™ FSH**. The inter-assay precision was confirmed by 3 different evaluators with 3 different lots, testing five times each different concentrations.

FSH (mIU/mL)	Intra-assay		Inter-assay	
	Mean	CV%	Mean	CV%
5	5.05	3.61	5.05	3.45
25	25.75	3.73	25.77	4.02
50	52.32	2.99	52.45	3.16












- Comparability:** FSH concentrations of 100 clinical samples were quantified independently with **ichroma™ FSH** and mini VIDAS FSH (BioMérieux Inc. France) as per prescribed test procedures. Test results were compared and their comparability was investigated with linear regression and coefficient of correlation (R). Linear regression and coefficient of correlation between the two tests were $Y = 1.0188X - 0.0979$ and $R = 0.9914$ respectively.



REFERENCES

- Bruni JF, Van Vugt D, Marshall S, Meites J. Effects of naloxone, morphine and methionine enkephalin on serum prolactin, luteinizing hormone, follicle stimulating hormone, thyroid stimulating hormone and growth hormone. *Life Sci.* 1977 Aug 1;21(3):461-6.
- Kim HK, Kee SJ, Seo JY, Yang EM, Chae HJ, Kim CJ. Gonadotropin-releasing Hormone Stimulation Test for Precocious Puberty. *Korean J Lab Med.* 2011 Oct;31(4):244-9.
- Reyes FI, Winter JS, Faiman C. Pituitary-ovarian relationships preceding the menopause. I. A cross-sectional study of serum follicle-stimulating hormone, luteinizing hormone, prolactin, estradiol, and progesterone levels. *Am J Obstet Gynecol.* 1977 Nov 1;129(5):557-64.
- MacNaughton J, Banah M, McCloud P, Hee J, Burger H. Age related changes in follicle stimulating hormone, luteinizing hormone, oestradiol and immunoreactive inhibin in women of reproductive age. *Clin Endocrinol (Oxf).* 1992 Apr;36(4):339-45.
- Reddi K, Wickings EJ, McNeilly AS, Baird DT, Hillier SG. Circulating bioactive follicle stimulating hormone and immunoreactive inhibin levels during the normal human menstrual cycle. *Clin Endocrinol (Oxf).* 1990 Oct;33(4):547-57.
- Baird DT, Campbell BK, Mann GE, McNeilly AS. Inhibin and oestradiol in the control of FSH secretion in the sheep. *J Reprod Fertil Suppl.* 1991;43:125-38
- Randolph JF Jr, Sowers M, Bondarenko IV, Harlow SD, Luborsky JL, Little RJ. Change in estradiol and follicle-stimulating hormone across the early menopausal transition: effects of ethnicity and age. *J Clin Endocrinol Metab.* 2004 Apr;89(4):1555-61
- Randolph JF Jr, Sowers M, Gold EB, Mohr BA, Luborsky J, Santoro N, McConnell DS, Finkelstein JS, Korenman SG, Matthews KA, Sternfeld B, Lasley BL. Reproductive hormones in the early menopausal transition: relationship to ethnicity, body size, and menopausal status. *J Clin Endocrinol Metab.* 2003 Apr;88(4):1516-22.

Note: Please refer to the table below to identify various symbols

	Read instructions for use
	Use by
	Batch code
	Catalog number
	Caution
	Manufacturer
	Authorized representative of the European Community
	In vitro diagnostic medical device
	Temperature limit
	Do not reuse
	This product fulfills the requirements of the Directive 98/79/EC on in vitro diagnostic medical devices

For technical assistance; please contact:

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