GENEVOLVE
Genomics Division

Name	:		
Lab No.	:	**Age**	:
Ref By	:	**Gender**	:
Collected	:	**Reported**	:
A/c Status	:	**Report Status**	:
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Test Report

Fluorescence in-situ Hybridization (FISH)

SPERM DNA FRAGMENTATION (TUNEL) ASSAY, FLUORESCENT MICROSCOPY

Specimen

Semen

Clinical Indication

Not provided

Result Summary

DNA FRAGMENTATION INDEX(DFI): 4%

Interpretation

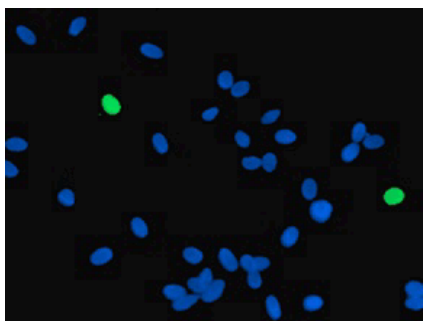
Sperm DNA fragmentation assessed by TUNEL assay is found to be less than or equal to 15% DFI corresponding to outstanding to sound sperm DNA credibility

Scoring Method

Manual

TUNEL ASSAY ANALYSIS

Total number of sperm cells evaluated	Negative	Positive
200	192	8



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Test Report

TUNEL assay for detection of sperm apoptosis. The fragmented (damaged) DNA indicating apoptotic sperm cells were observed as bright green when visualised under 100x eyepiece magnification.

DNA Fragmentation Index (DFI) :

$$\left\{ \frac{\text{Number of TUNEL positive sperm cells}}{\text{Total number of sperm cells evaluated}} \times 100 \right\}$$

Four statistical types of fertility potency :	
Less than or equal to 15% DFI	Outstanding to Sound sperm DNA credibility
Between 15 to 25% DFI	Best to Good sperm DNA credibility
Between 25 to 50% DFI	Good to Weak spern DNA credibility
Greater than or equal to 50% DFI	Exceptionally Poor sperm DNA credibility

Marchlew ska et al., 2016 and Arumugam et al., 2019

Methodology

DNA fragmentation in spermatozoa were evaluated simultaneously using a modified TUNEL assay associated with FISH.

Recommendations

- Kindly correlate with Chromosomal analysis and sperm aneuploidy testing.
- Genetic counselling is recommended.

Comments

- Test results should be interpreted in the context of clinical findings, family history, and other laboratory data. Misinterpretation of results may occur if the information provided is inaccurate or incomplete.
- Male infertility due to causes other than sperm DNA fragmentation test, must be excluded.

Indications for Testing

This test is useful in males diagnosed with non-obstructive azoospermia or moderate to severe oligospermia, idiopathic infertility and those undergoing testicular sperm extraction (TESE) or prior to ICSI/IVF.

Clinical implications of Sperm DNA fragmentation assay

- This assay offers a potentially useful way to examine the ability of sperm to interact successfully with an egg that goes beyond the standard semen parameters of density, motility, and morphology.
- It provides prognostic value in assessing the outcome of assisted conception treatment.

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Test Report

- The assay helps in the clinical diagnosis, management and treatment of male fertility.
- Sperm DNA fragmentation is higher in sub-fertile men with abnormal sperm parameters.
- Embryos derived from sperm with highly fragmented DNA have poor prognosis. An elevated DNA fragmentation could result in initiation of apoptosis (natural cellular death) and mutations resulting in blastocyst arrest, miscarriage and abnormalities in the offspring.

Disclaimer

This is a Laboratory developed test (LDT), developed at Dr. Lal PathLabs and has not been cleared or approved for specific uses by FDA.

References

- Arumugam M, Shetty DP, Kadandale JS, Nalilu SK. Association of Sperm Aneuploidy Frequency and DNA Fragmentation Index in Infertile Men. J Reprod Infertil. 2019; 20(3):121-126.
- Chen Q, Zhao JY, Xue X, Zhu GX. The association between sperm DNA fragmentation and reproductive outcomes following intrauterine insemination, a meta analysis. Reprod Toxicol. 2019; 86:50-55.
- Evenson DP, Wixon R. Clinical aspects of sperm DNA fragmentation detection and male infertility. Theriogenology. 2006; 65(5):979-991.
- Sharma R, Masaki J, Agarwal A. Sperm DNA fragmentation analysis using the TUNEL assay. Methods Mol Biol. 2013; 927:121-136.

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----------End of report ----------

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Test Report

IMPORTANT INSTRUCTIONS

•Test results released pertain to the specimen submitted.•All test results are dependent on the quality of the sample received by the Laboratory.•Laboratory investigations are only a tool to facilitate in arriving at a diagnosis and should be clinically correlated by the Referring Physician .•Report delivery may be delayed due to unforeseen circumstances. Inconvenience is regretted.•Certain tests may require further testing at additional cost for derivation of exact value. Kindly submit request within 72 hours post reporting.•Test results may show interlaboratory variations.•The Courts/Forum at {@show#jurisdiction} shall have exclusive jurisdiction in all disputes/claims concerning the test(s) & or results of test(s).•Test results are not valid for medico legal purposes.•This is computer generated medical diagnostic report that has been validated by Authorized Medical Practitioner/Doctor.•The report does not need physical signature.

(#) Sample drawn from outside source.

If Test results are alarming or unexpected, client is advised to contact the Customer Care immediately for possible remedial action.

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National Reference lab, Delhi, a CAP (7171001) Accredited, ISO 9001:2015 (FS60411) & ISO 27001:2013 (616691) Certified laboratory.