

# **Follicular Anti-Müllerian Hormone (AMH) as a Predictor for Embryo Grading and Clinical Pregnancy in Patients Undergoing In Vitro Fertilization (IVF)**

Thesis

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قياس الهرمون المضاد لعامل المولييرين فى  
المحلول الحويصلى للمبيض كوسيله للتنبؤ فى  
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# List of Abbreviations

Abb.	Full term
AFC	Antral Follicle Count.
AMH	Anti-Müllerian hormone.
AMHR	Anti-Müllerian hormone receptor.
ART	Assisted reproductive technologies.
BMI	Body mass index.
BMPs	Bone morphogenetic proteins.
CA	Cancer antigen.
CC	Clomiphene Citrate.
CD 3	Cycle day 3.
COH	Controlled ovarian hyperstimulation.
COS	Controlled ovarian stimulation.
D3EQ	Day 3 embryo quality.
DFC	Dense Fibrillar Component.
d-OPU	Day of ovum pick up.
DOR	Diminished ovarian reserve.
E2	Estradiol.
FASTT	Fast tract and standard treatment.
FBC	Full blood count.
FC	Fibrillar Center.
FF	follicular fluid.
FF-AMH	Follicular fluid Anti-Müllerian hormone.
FP	Fragmentation pattern.
FSH	Follicle stimulating hormone.
GC	Granular Component.

GnRH	Gonadotrophin- releasing hormone.
GnRH-a	Gonadotrophin- releasing hormone agonist.
GnRH-nt	Gonadotrophin-releasing hormone antagonist.
HCG	Human chorionic gonadotrophin.
HH	Hypogonadotrophic hypogonadism.
HMG	Human menopausal gonadotrophins.
HMG-HP	Human menopausal gonadotrophins highly purified.
ICSI	Intracytoplasmic sperm injection.
IUI	Intrauterine insemination.
IVF-ET	In Vitro Fertilization –Embryo Transfer .
LH	Leutinizing hormone.
MFD	Multiple follicular development.
MIF	Müllerian inhibiting factor.
MIH	Müllerian-inhibiting hormone.
MIS	Müllerian-inhibiting substance.
MOV	Mean ovarian volume.
NICE	National Institute Health and Clinical Excellence.
NPBs	Nucleolar precursor bodies
OHSS	Ovarian hyperstimulation syndrome.
OI	Ovulation induction.
PCOS	Polycystic ovarian syndrome.
pFSH	Purified follicle stimulating hormone.
PRL	Prolactin.
rFSH	Recombinant follicle stimulating hormone.
rLH	Recombinant leutinizing hormone.
ROC	Reciever operating characteristics.

SMAD	Signaling mothers against decapentaplegic homolog proteins to regulate cellular functions.
TGF- $\beta$	Transforming growth factor $\beta$ .
TMX	Tamoxifen.
TSH	Thyroid stimulating hormone.
Ufsh	Urinary follicle stimulating hormone.
uFSH-HP	Urinary follicle stimulating hormone highly purified.
WHO	World Health Organization.
WHO-IRP	World Health Organization Second International Reference Preparation
Z-Score	Zygot scoring.

## INTRODUCTION

Anti-Müllerian hormone (AMH) or Müllerian-inhibiting substance (MIS) is a glycoprotein hormone of the transforming growth factor beta (TGF- $\beta$ ) family with a molecular weight of 140 kilodalton. AMH is produced as a precursor and undergoes glycosylation or cleavage to form the mature molecule. AMH activity was localized to the immature sertoli cells from the time of fetal sex differentiation to puberty in the testis and to the granulosa cells of postnatal ovary to the end of ovarian activity. The knowledge of the normal and pathological expression of AMH and the regulatory mechanisms involved encouraged scientists to study its clinical implications (*Appasamy and Muttukrishna, 2008*).

Several studies have recently investigated the circulating levels of AMH throughout the menstrual cycle. Most studies have reported that AMH levels do not alter significantly throughout the cycle whereas one recent study reports a significant rise in AMH in the late follicular phase compared to ovulation and early luteal phase of the cycle (*Wunder et al., 2007*).

The specific expression pattern of AMH in growing follicles has prompted us and others to investigate whether AMH levels are indicative for the size of the growing follicle pool. The quantitative aspect of ovarian aging is reflected by a