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Genetic merits of fertility in Egyptian goats

By

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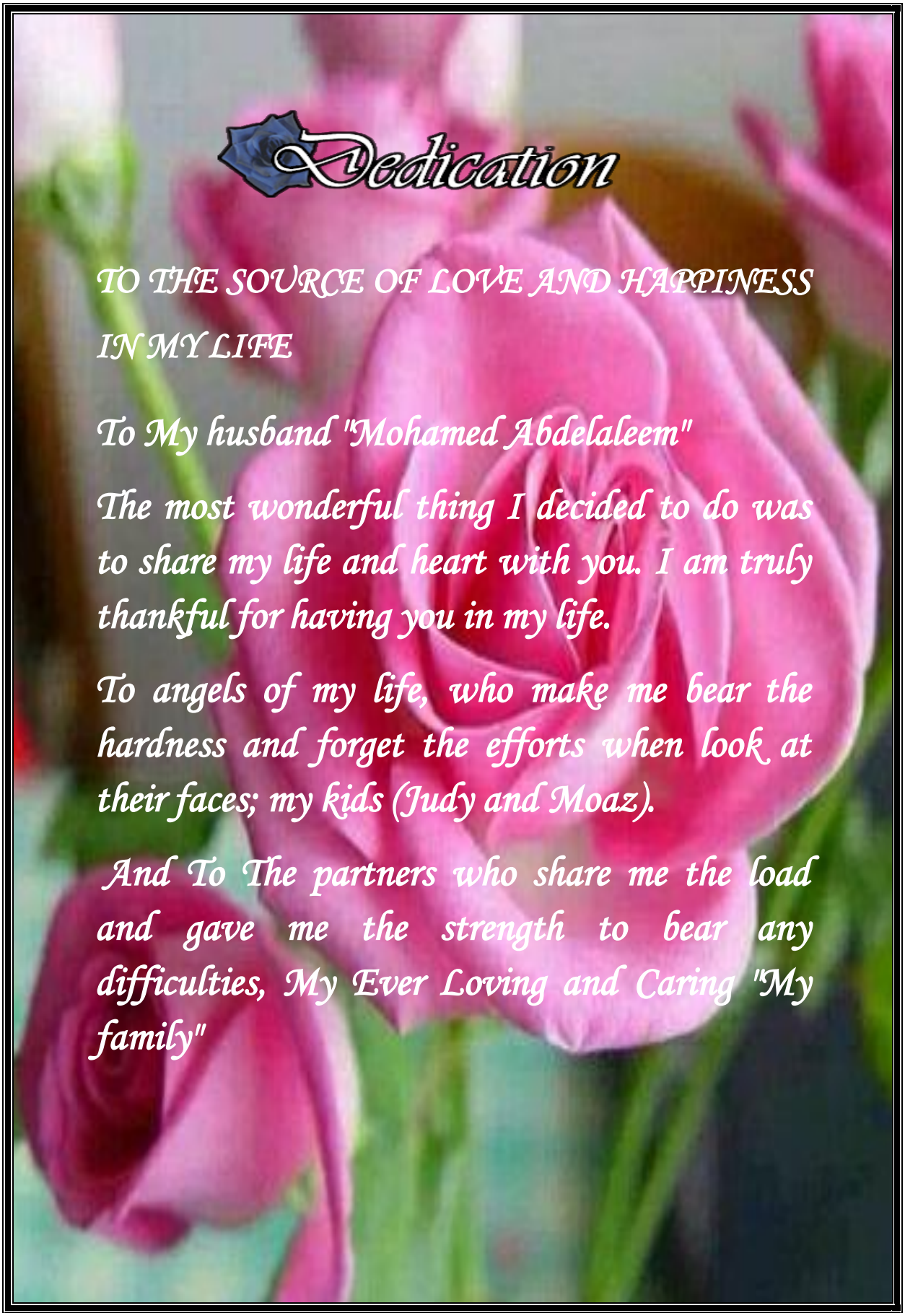
Abstract:

Aiming to estimate the genotypic and allelic frequencies of FSHβ and FSHR genes in four Egyptian goat breeds in relation to fertility traits, DNA was isolated from whole blood of 160 animals of Baladi, Parqi, Damascus and Zaraibi goat breeds. PCR-SSCP and sequencing for FSHβ Exon1 revealed five genotypes and several SNPs with significant positive effect of AA genotype on litter size. Two genotypes and one SNP in restriction site of the enzyme at Intron2, Exon3 locus of FSHβ gene using PCR- RFLP technique were obtained. Polymorphism using PCR- SSCP of FSHR 5' regulatory region revealed three genotypes and two SNPs, with AA and BB genotypes had greater litter size in Baladi and Parqi does respectively. While, exon10 of FSHR gene had only one genotype indicating homozygosity of this locus among studied breeds. These results revealed that FSHβ and FSHR genes could be potential candidate genetic markers for improving goat breeding.

Key words: FSHβ, FSHR, genotyping, fertility traits, Egyptian goats.


Dedication
TO THE SOURCE OF LOVE AND HAPPINESS IN MY LIFE
To My husband "Mohamed Abdelaleem"
The most wonderful thing I decided to do was to share my life and heart with you. I am truly thankful for having you in my life.
To angels of my life, who make me bear the hardness and forget the efforts when look at their faces; my kids (Judy and Moaz).
And To The partners who share me the load and gave me the strength to bear any difficulties, My Ever Loving and Caring "My family"

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"Whoever does not thank people does not thank ALLAH"

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INTRODUCTION

Domesticated goats (Capra hircus) are generally referred to as poor-man's cow because of the significant role they play in the economic life of resource poor farmers in the traditional farming system, apart from being a source of high quality meat, milk, fiber and skin, goats are used as reserves for quick source of money in times of pressing need **(Morand-Fehr, 1993).**

In mammals the ovulation rate and the litter size is a result of well regulated interactions of endocrine and paracrine mediators. How precisely the litter size is controlled remains a critical and important question in reproductive biology. The tendency of twining and triplicate is common in both sheep and goat **(Polley et al., 2009).**

The follicle stimulating hormone (FSH) is a pituitary gonadotropin that plays a key role in the regulation of gonadal function and follicle development in mammals **(Bartlewski et al., 2009; Aerts and Bols, 2010).**

In new-born female mammals, FSH levels in the blood are very low, and slowly increase with age. A large number of FSH are secreted and released by pituitary after puberty, so that the blood concentrations of FSH significantly increased. In the same species, the livestock of some high litter size have higher FSH concentration than that of others in the blood **(Prunier and Chopineau 1990; Fleming et al. 1996; Wikins 1997).**

Al-Obaidi et al. (1987) confirmed that the increase of ovulation rate caused by inhibin had relationship with the elevated FSH