

The effect of hydroalcoholic extract of *Thymbra spicata* on in- vitro maturation of ovine oocyte

Esmail Ghobadi¹, Aliasghar Moghadam^{2*}, Tayebah Mohammadi³ and Peyman Rahimi Faili⁴

¹DVM Graduated, Faculty of Veterinary Medicine, Razi University, Kermanshah, Iran

² Associated Professor, Department of Clinical Sciences, Faculty of Veterinary Medicine, Razi University, Kermanshah, Iran

³ Assistant Professor, Department of Basic and Pathobiological Sciences, Faculty of Veterinary Medicine, Razi University, Kermanshah, Iran

⁴ Assistant Professor, Department of Clinical Sciences, Faculty of Veterinary Medicine, Razi University, Kermanshah, Iran

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Abstract

In vitro maturation (IVM) of oocytes and subsequently, in vitro fertilization (IVF) for the generation of embryos in the laboratory have important values. Considering that antioxidants are known as effective free radicals scavenger, it is possible to improve the in vitro oocyte maturation and the fetal quality. Therefore, the aim of this study is to evaluate the effect of *Thymbra spicata* hydroalcoholic extract as a source of antioxidant on in-vitro sheep oocyte maturation. Cumulus oocyte complexes (COCs) were collected from ewe ovaries and were cultured for 24 hours in maturation medium in TCM supplemented with FSH, LH, FBS, cysteamine, pyruvate sodium and antibiotics (control group) and in maturation medium without cysteamine (as an antioxidant) supplemented with different doses of *Thymbra spicata* hydroalcoholic extract (1mg/ml: group 1, 10 mg/ml: group 2, 50 mg/ml: group 3) as an antioxidant. In-vitro maturation stages and resumption of meiotic was assessed by determination of cumulus cells mass expansion and number of oocytes in metaphase II stage of meiotic division in all groups. Cumulus cells mass expansion was similar between control, 2 and 3 groups. However, in group 1 was lower than control group. Nuclear maturation was similar between control and group 3 and both of them were different with groups 1 and 2. The results of this study showed that the *Thymbra spicata* hydro alcoholic extract, has a positive effect on oocyte maturation that is doses dependent. So with increasing concentration of *Thymbra spicata* hydroalcoholic extract, the rate of maturation immature oocytes is increased. Generally, we conclude that addition of appropriate amounts of natural extracts such as *Thymbra spicata* to maturation medium improves oocytes maturation.

Key words: In vitro maturation (IVM), Oocyte, Sheep, *Thymbra spicata*

* **Corresponding Author:** Aliasghar Moghadam, Associated Professor, Department of Clinical Sciences, Faculty of Veterinary Medicine, Razi University, Kermanshah, Iran
E-mail: moghaddam@razi.ac.ir



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