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Effect of Estradiol Benzoate on oxidative status of healthy and endometritis-affected mares

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INTRODUCTION

Since estrogen has been pointed out as a possible antioxidant, this study aimed to verify the effect of estradiol benzoate administration on oxidative stress parameters quantified in the serum of mares affected by endometritis and healthy ones.

METODOLOGY

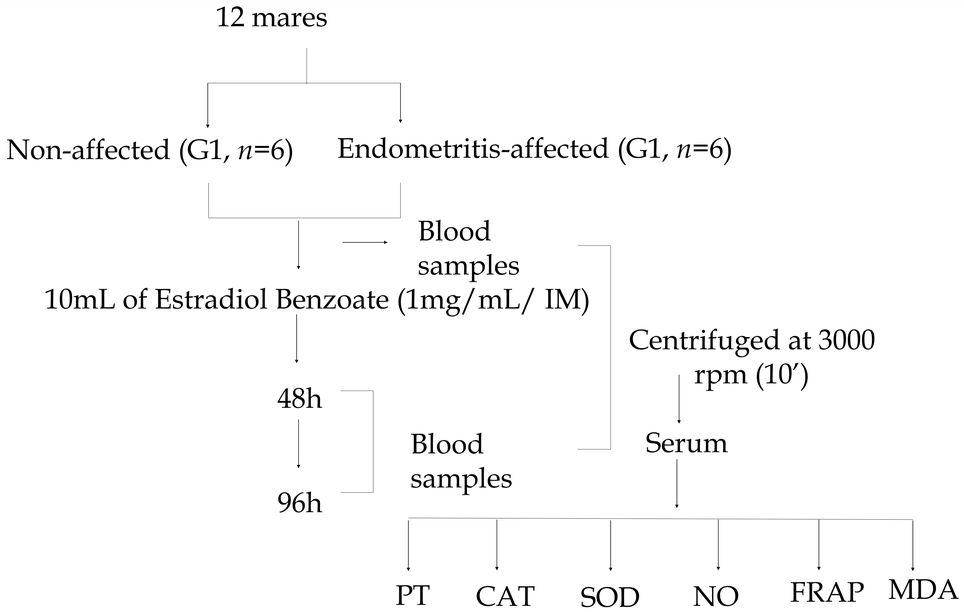

Figure 1. Schematic view of methodology. Total protein (PT); Catalase (CAT); Superoxide dismutase (SOD); Nitric oxide (NO); Total antioxidant capacity (FRAP); Malondialdehyde (MDA).

RESULTS

Table 1. Mean values of oxidative stress parameters after Estradiol Benzoate administration

MOM	NA	EA	NA	EA	NA	EA	NA	EA	NA	EA	NA	EA
	SOD	SOD	CAT	CAT	MDA	MDA	PT	PT	NO	NO	F	F
PE2	43^{Aa}	41^{Ab}	62^{Ab}	60^{Aa}	32^{Aa}	29^{Aa}	$0{,}6^{Aa}$	$0{,}6^{Aa}$	2^{Aa}	2^{Ab}	4^{Aa}	4^{Aa}
48h	43^{Ba}	54^{Aa}	73^{Ab}	80^{Aa}	44^{Aa}	35^{Aa}	$0{,}6^{Aa}$	$0{,}6^{Aa}$	2^{Aa}	4^{Aa}	4^{Aa}	4^{Aa}
96h	46^{Aa}	47^{Aab}	133^{Aa}	90^{Ba}	43^{Aa}	49^{Aa}	$0{,}4^{Aa}$	$0{,}6^{Aa}$	2^{Aa}	2^{Ab}	5^{Aa}	5^{Aa}
CV (%)	21,0		35,1		45,6		36,9		87,4		32,3	

MOM: Moment; PE2: Before Estradiol Benzoate aplication; NA: Non-affected ; EA: Endometritis-affected; SOD: Superoxide dismutase; CAT: Catalase; MDA: Malondialdehyde ; PT: Total protein; NO: Nitric oxide , F: Total antioxidant capacity
*Means followed by the same lowercase letters in the column and uppercase letters in the row do not differ by Duncan's test ($p>0.05$)

DISCUSSION

The analyzed results indicate that mares with endometritis undergo an oxidative process, evidenced in the present work by the increase of NO and SOD in G2. Activation of the immune system in response to endometritis associated with excess of NO production is part of the body's defense mechanism. The excess of pro-oxidants, in turn, is responsible for the imbalance of the antioxidant pathway, possibly associated with the observed increase in SOD. The enzymes CAT and SOD are key factors in the control of reactive oxygen species, and agents capable of modulating them may be useful as therapeutic intermediates in disorders associated with oxidative stress, such as endometritis.

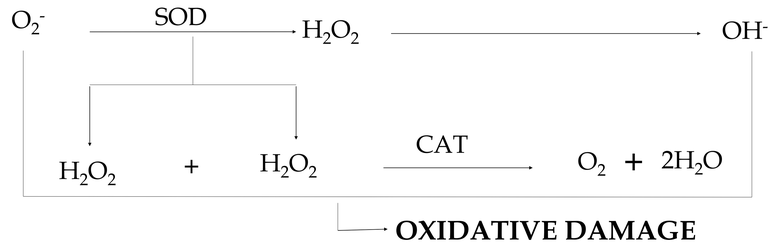

Figure 2. Integration of catalase (CAT) and Superoxide dismutase (SOD) enzymatic defense systems

CONCLUSION

Estradiol Benzoate (10mL, 1mg/mL, IM) has a direct effect on the serum antioxidant enzyme activity of CAT and SOD, however, further investigations on the subject are needed.

ACKNOWLEGMENTS

CAPES