

# CATALASE ISOZYMES CONTENT IN GRANULOSE LAYER CELLS FROM FOLLICLES OVARIES OF COWS

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## Introduction

Catalase (CAT) is an enzyme that destroys hydrogen peroxide and is found in mammalian cells. This enzyme is active in the cells of the granulosa layer of the ovarian follicles of cows. It was found that the activity of CAT in ovarian follicles is not constant and varies depending on the physiological state of the gonad (Bodnar Yu., 2016).

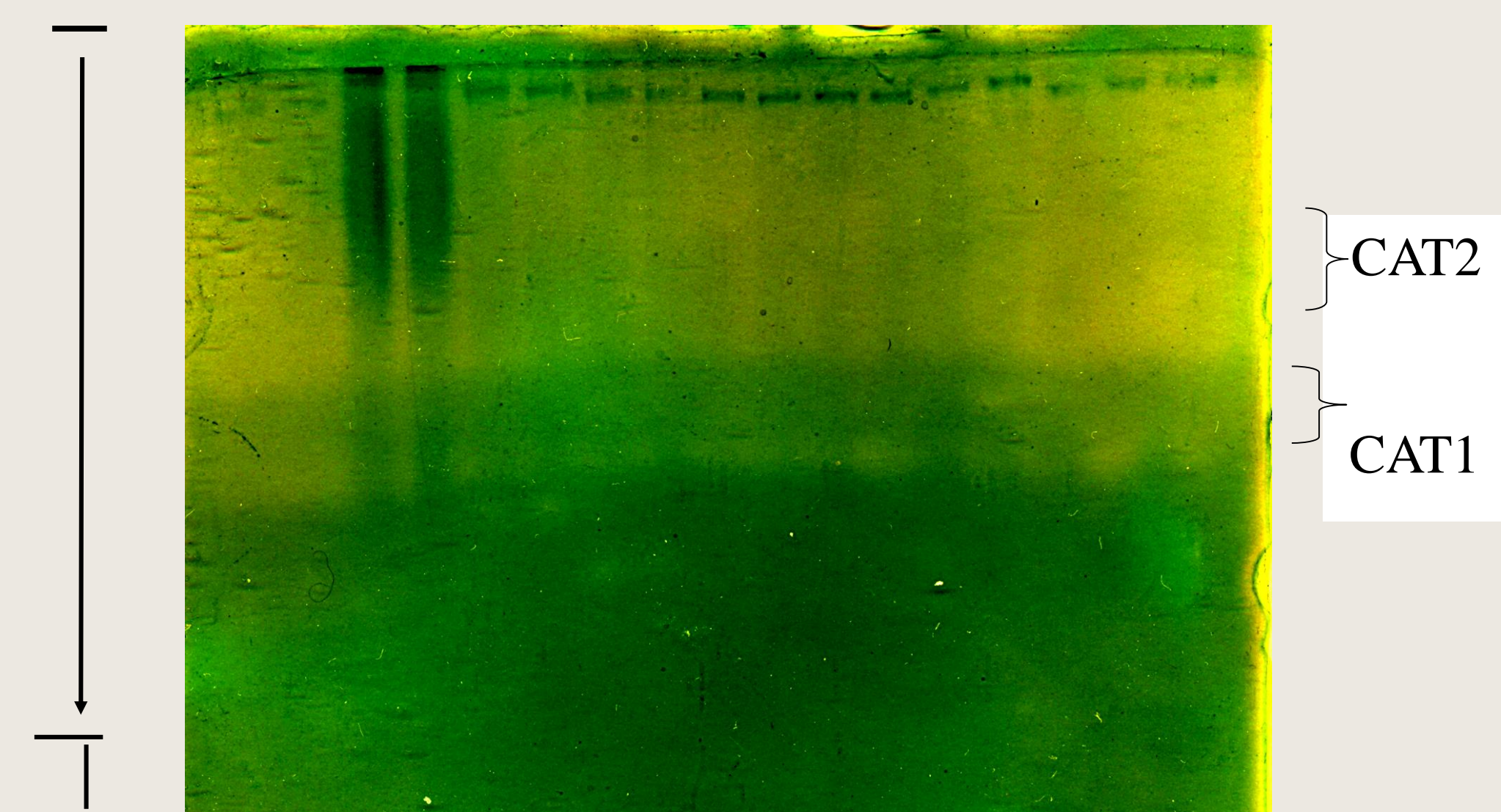
## Material & Methods

After slaughter of cows, the ovaries were selected and evaluated by physiological condition (Huzevatyi et al., 1995). To detect CAT proteins, samples were electrophoresed in 7.5% PAAG, after which the gel plates were stained by the method of Wodbury W. (1971).

## Results

It was found that CAT is manifested on the phoregrams by two light unstained (or weakly stained) bands of proteins (CAT1 and CAT2), of different area and electrophoretic mobility. The intensity of the manifestation of isozyme bands is not the same. Thus, the average content of isozymes (CAT1 -  $36.7 \pm 2.65\%$  and CAT2 -  $63.3 \pm 2.65\%$ ) is characteristic of ovarian cells of "follicular growth". In granulosa from the "early" and "late corpus luteum", compared with "follicular growth" content of CAT1 in lower on 0.9 - 1.3% and on 1.0 - 1.3% higher for CAT2. For ovarian cells of "fresh ovulation" is characterized by a reduced content of CAT1 and increased CAT2. The difference between the minimum and maximum values of isozymes is - 6.5%.

The content of CAT isozymes, taking into account the physiological state of the ovary, is influenced by the size of the follicles from which the granulosa cells aspirate. In particular, the content of CAT1 in cells from follicles of 4 - 7 mm of the ovary "fresh ovulation" and less than 4 mm of "early corpus luteum" is lower (11.3 - 13.4%). Accordingly, the content of CAT2 in these cells is as high as possible (86.6 - 88.7%). Almost the same values of isozyme content were found in granulosa from follicles less than 7 mm "follicular growth", 4 - 7 mm "early corpus luteum" and more than 7 mm "fresh ovulation": CAT1 - 40.8 - 58.8%, CAT2 - 41.2 - 59.2%. The difference between the minimum and maximum values of CAT1 is 47.5% ( $p < 0.05$ ). For follicle cells less than 4 mm of "fresh ovulation" and more than 7 mm of "follicular growth" and all sizes of "late corpus luteum" are characterized by almost the same values of CAT1 - 29.6 - 36.7%.



Catalase isozymes in granulosa cells

## Conclusions

Thus, CAT is manifested on the phoregrams by two light unpainted (or slightly colored) bands of proteins, of different size and electrophoretic mobility. The intensity of the manifestation of isozyme bands is not the same and depends to a greater extent on the size of the follicles from which the granulosa cells are removed and to a lesser extent on the physiological state of the ovary.