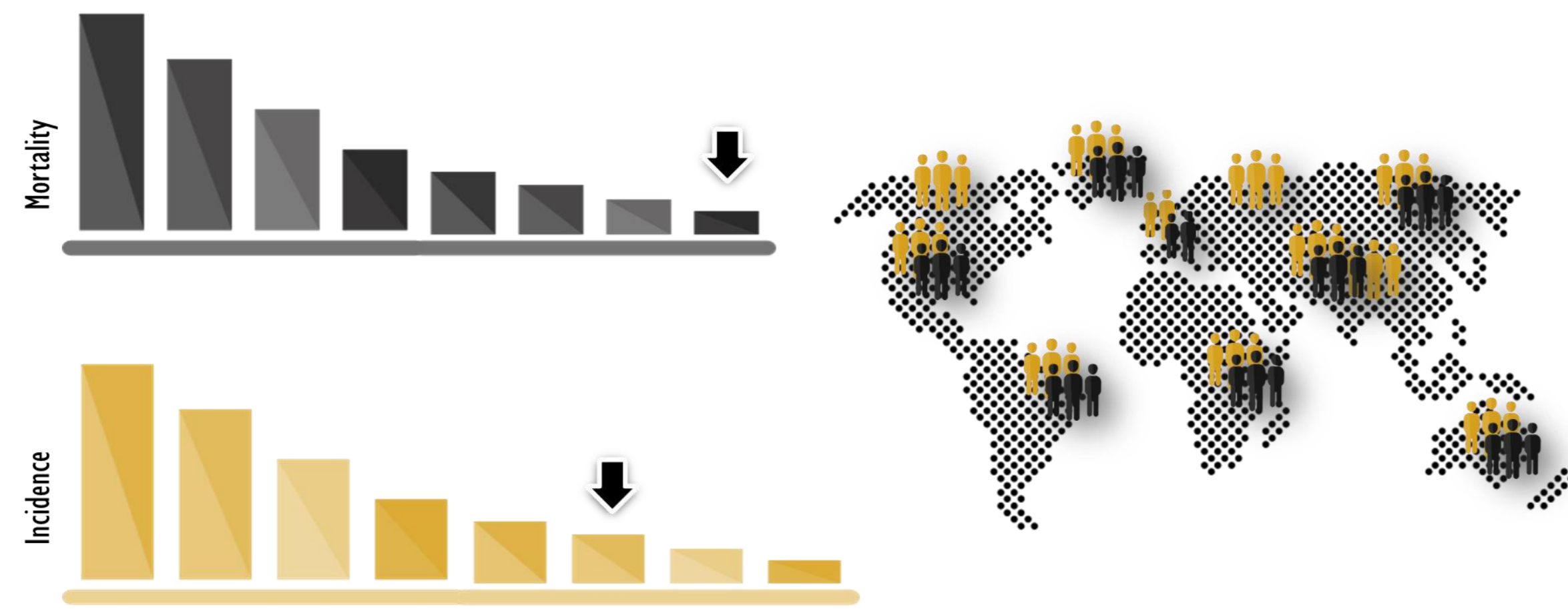


Tavares-Silva E (1,2), Neves AR (1), Abrantes AM (1,3,4), Silva-Teixeira R (1), Figueiredo A (2), Botelho MF (1,3,4)

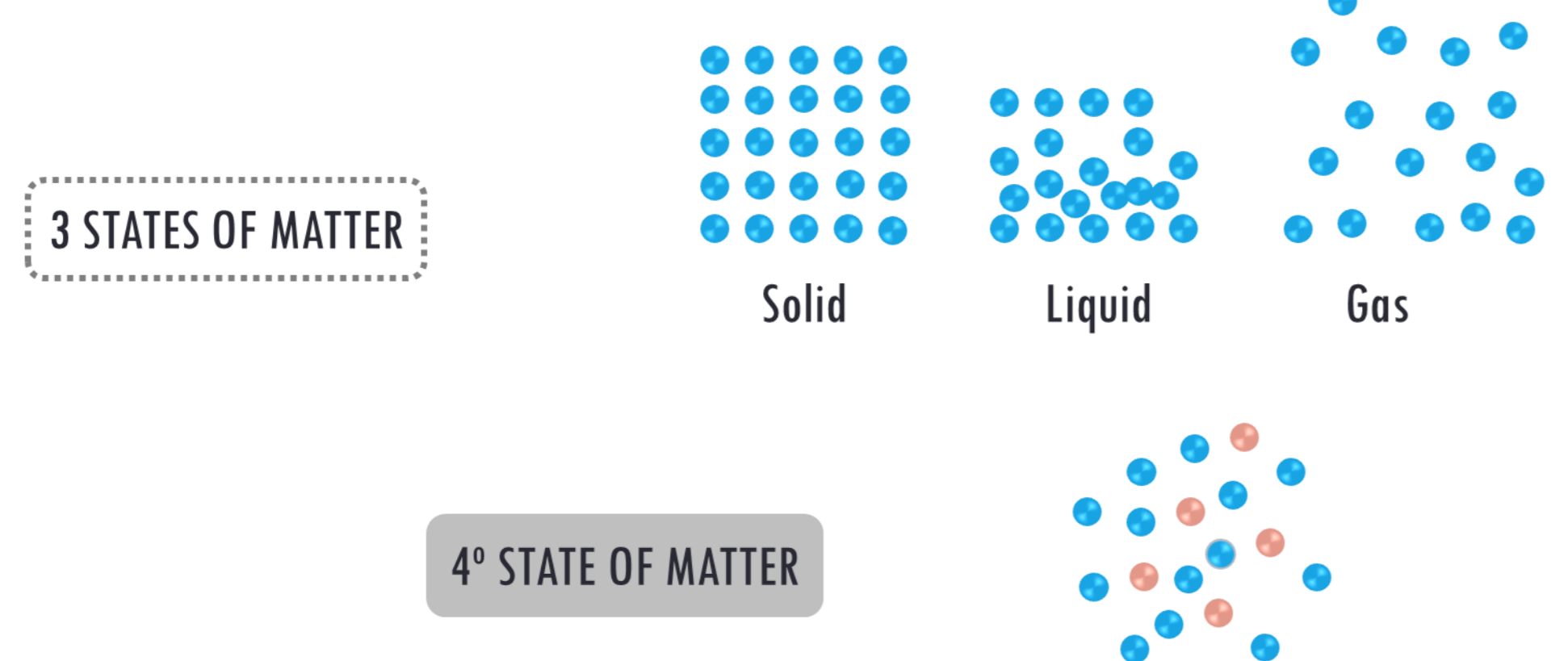
1-Biophysics Institute, Faculty of Medicine, University of Coimbra, Portugal; 2-Department of Urology and Transplantation, CHUC, Coimbra, Portugal; 3-Institute for Clinical and Biomedical Research (ICBR) area of Environment Genetics and Oncobiology (CIMAGO), Faculty of Medicine, University of Coimbra, Portugal; 4-CNC.IBILI, University of Coimbra, Portugal;

INTRODUCTION

Bladder cancer (BC) is a solid tumor with high recurrence rates. It is the sixth tumor with the highest incidence and the eighth one with the highest mortality in the world.



Plasma is one of the physical states of matter, in which a certain portion of the particles is ionized. Its use in medicine is an emerging field that has grown rapidly.



AIM: To evaluate the effect of cold atmospheric plasma (CAP), namely cytotoxicity and the oxidative stress, in a human bladder cancer cell lines.

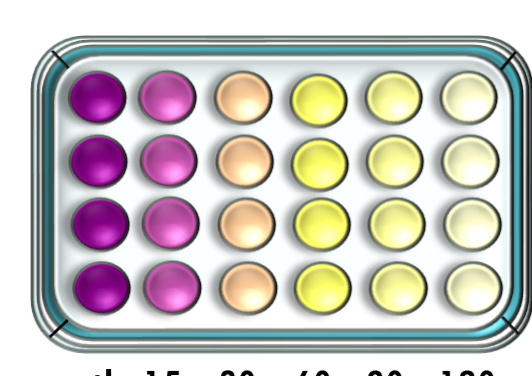
MATERIAL AND METHODS

CELL CULTURE:

- Cell lines: HT1376 | TCCSUP
- DMEM
- 5% FBS
- 95% air and 5% CO₂; 37°C

METHODS:

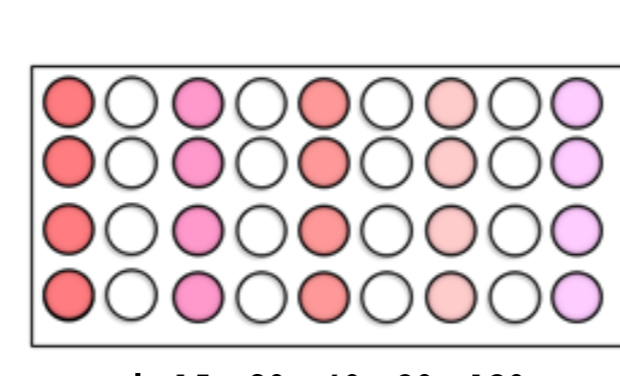
I. Evaluation of metabolic activity:



ctrl 15s 30s 60s 90s 120s

MTT

II. Evaluation of protein content:

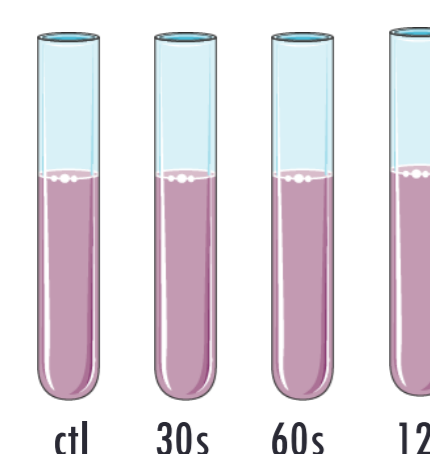


ctrl 15s 30s 60s 90s 120s

SRB

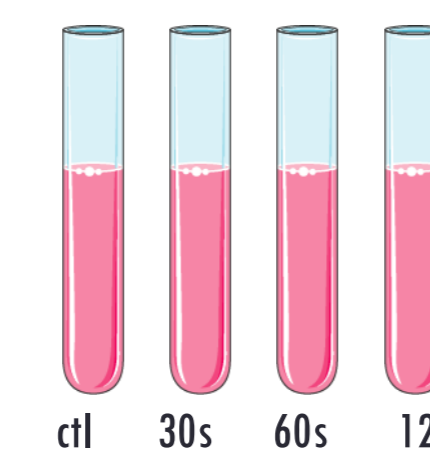
III. Evaluation of oxidative stress and antioxidant defense:

INTRACELLULAR PRODUCTION OF PEROXIDES



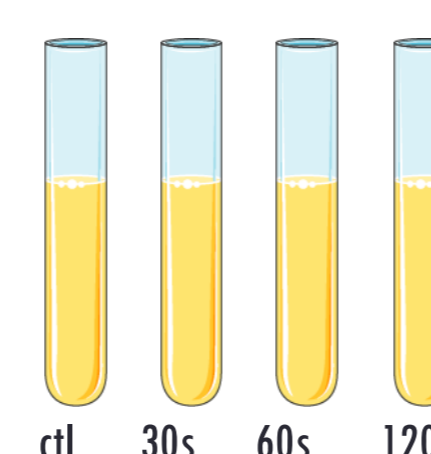
DCF

INTRACELLULAR PRODUCTION OF RADICAL SUPEROXIDE



DHE

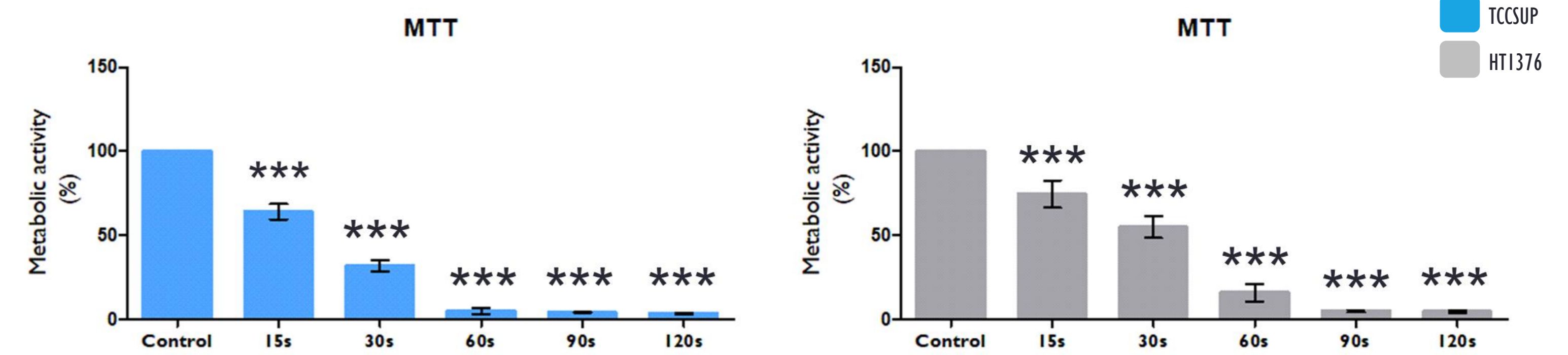
ANTIOXIDANT DEFENSE



GSH

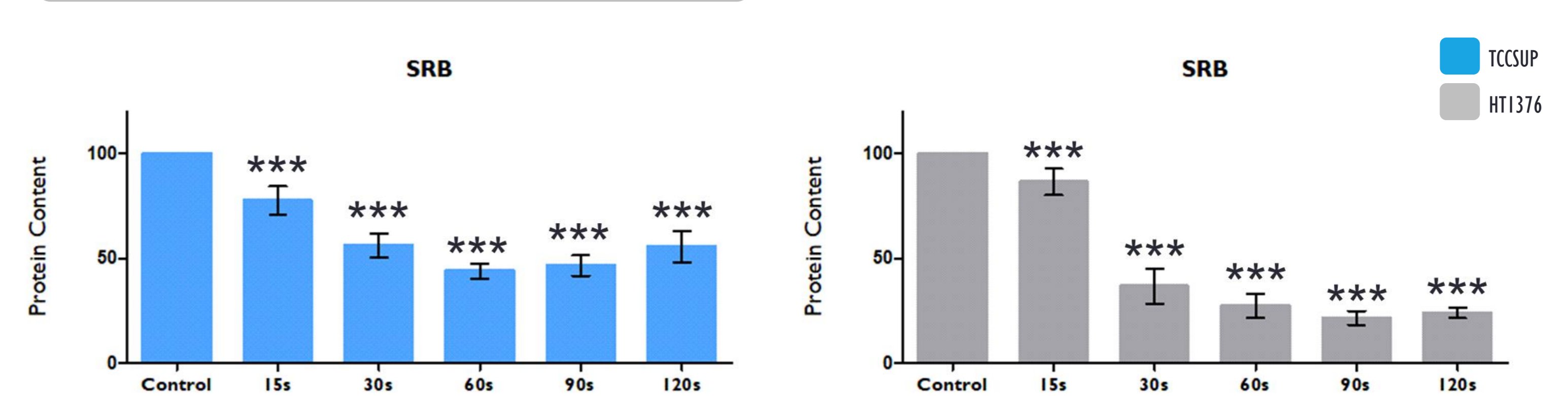
RESULTS

I. Evaluation of metabolic activity:



Decrease of metabolic activity for both cell lines

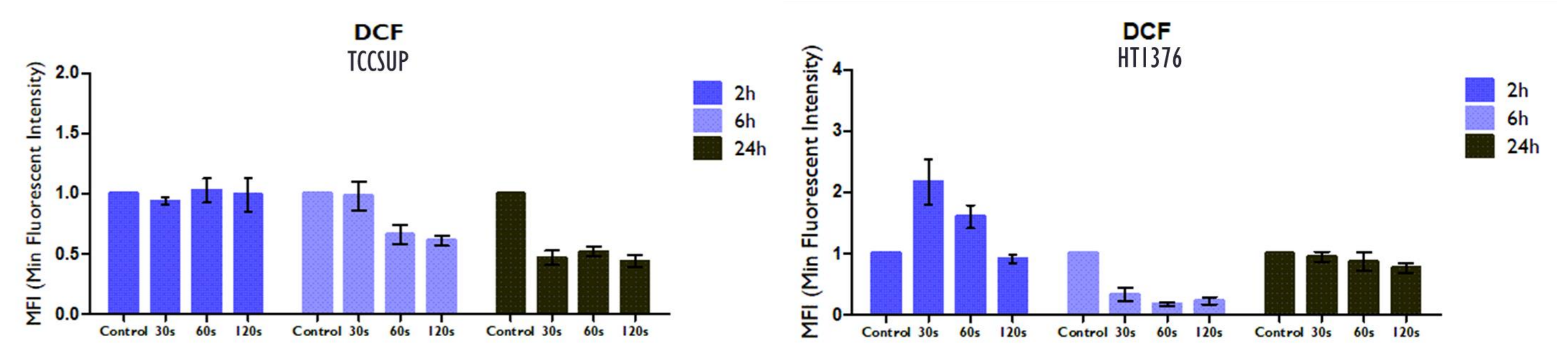
II. Evaluation of protein content:



Decrease of protein content for both cell lines

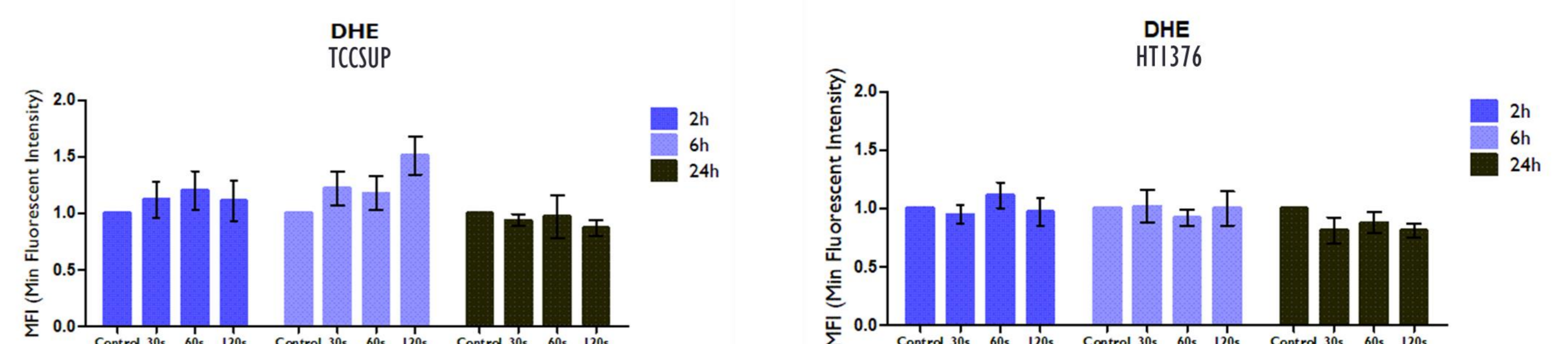
III. Evaluation of oxidative stress and antioxidant defense:

a) Intracellular production of peroxides:



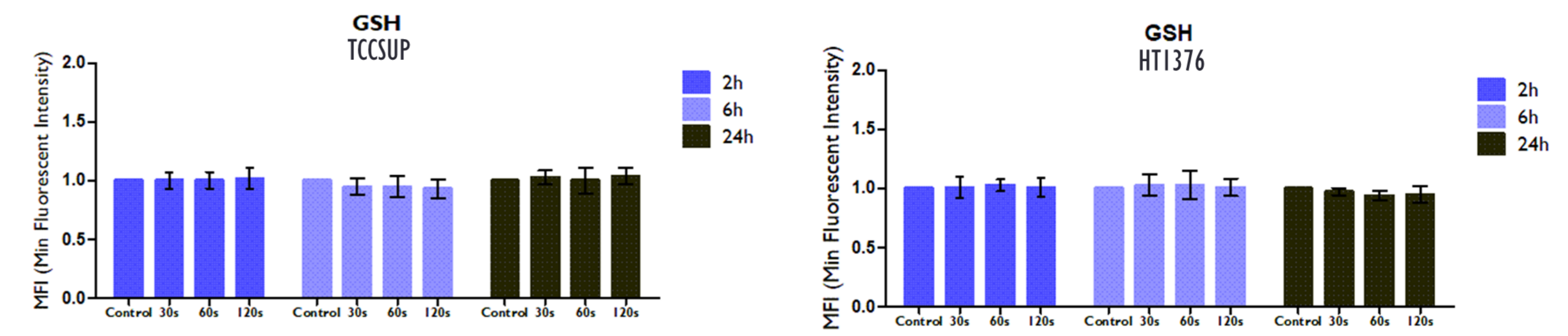
Decrease of intracellular production of peroxides for both cell lines

b) Intracellular production of radical superoxide:



Increase of intracellular production of radical superoxide for TCCSUP cell line

c) GSH levels:



No significant difference in expression of GSH levels for both cell lines

CONCLUSIONS

Cytotoxicity results show that CAP treatment was able to induce a significant reduction of total protein content and metabolic activity even after short periods of exposure. These outcomes obtained encourage further studies. CAP can potentially offer a minimally-invasive option that allows specific cell removal without interfering with the whole tissue.

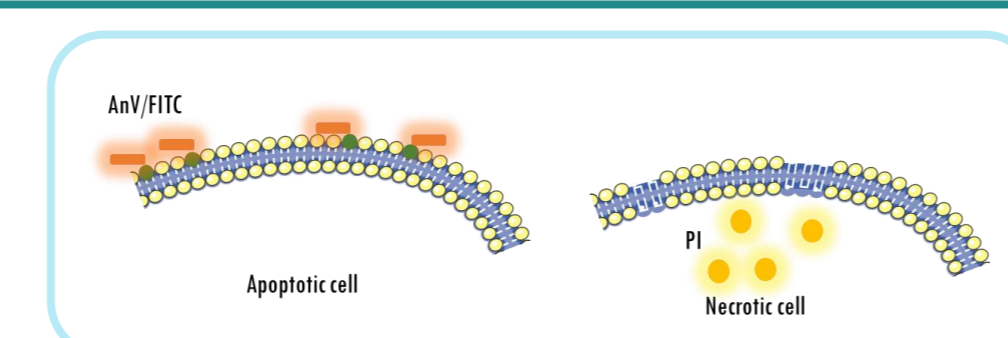
ON GOING

I. Tumor cell lines:

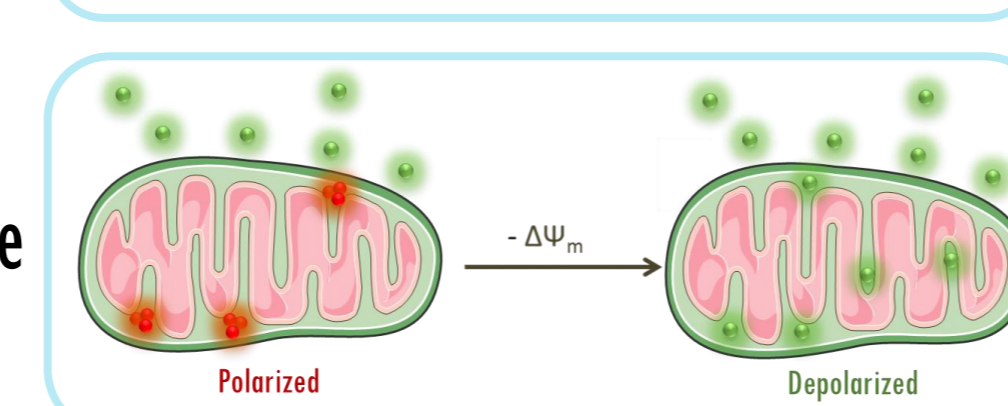


Flow Cytometry:

Types of cell death



Mitochondrial membrane potential



Cell cycle



II. Normal cell line:



Cytotoxicity assays:

