ALTERATIONS IN GLUCOSE CONCENTRATION SHOWS NEW PERSPECTIVES IN GASTRIC CANCER METABOLIC STUDIES *IN VITRO*

SILVA. E. L.[a], MESQUITA. F. P. [a], PORTILHO. A. J. [a], BEZERRA, E. C. A.[a], SALES, L. O. [a], VASCONCELLOS, M. C. [b] MOREIRA-NUNES, C. A. [a]; MORAES, M. E. A. [a]; MONTENEGRO, R. C. [a]

a Laboratory of Pharmacogenetics, Drug Research and Development Center (NPDM), Federal University of Ceará, Cel. Nunes de Melo, 1000 – Rodolfo Teófilo. Fortaleza, Brazil.
B Biological Activity Laboratory, Faculty of Pharmaceutical Sciences, Federal University of Amazonas, Av. General Rodrigo Octavio Jordão Ramos, 1200 – Coroado. Manaus, Brazil.

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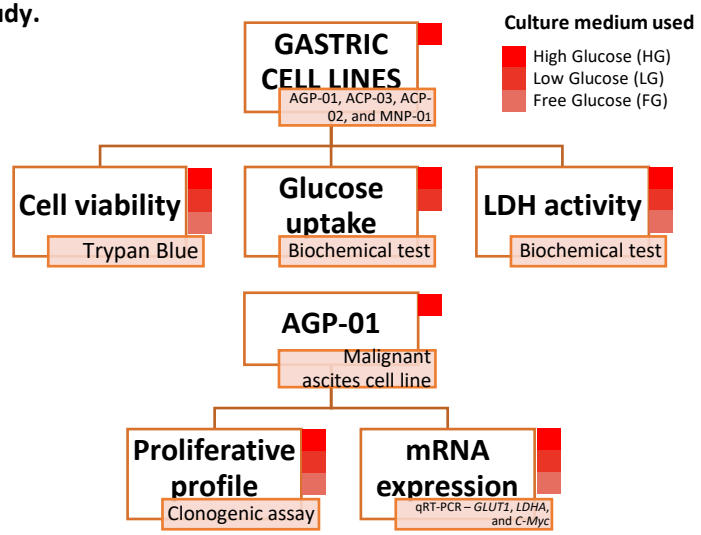
INTRODUCTION

Metabolic reprogramming involves cancer cell capability in modifying, or reprogramming, its metabolism in different conditions[1]. Metabolic reprogramming seems to be a potential area to study new pharmacological targets in cancer[2]. In *in vitro* research, cancer cells lines are cultivated in high glucose (HG) concentration mediums (25 mM or 450 mg/dL), this may introduce bias in metabolic studies since in normal conditions, blood glucose levels are around 4 - 6 mM (72 - 108 mg/dL)[3]. Thus, the aim of this study is evaluating the metabolic profile of gastric cell lines in culture media with different concentrations of glucose.

METHODS

Figure 1. Flow diagram of the experimental design of the study.



RESULTS

Figure 2. Modifications in cell viability, glucose uptake, and LDH activity in gastric cell lines in different glucose conditions. (A) Average of cell viability, (B) LDH activity, and (C) Glucose uptake in HG and (D) LG medium. Significant differences: *p<0.05, **p<0.001, ***p<0.0001.

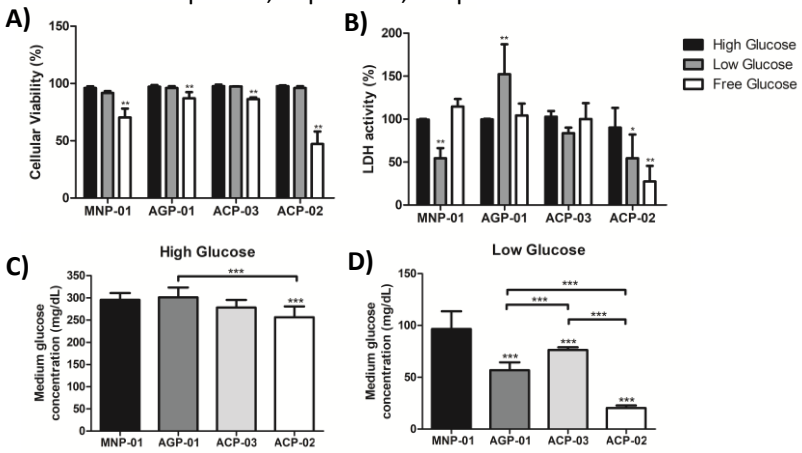


Figure 3. Effect of glucose variation on AGP-01 proliferation. (A) Pictures of cell colonies and (B) The average of colonies, after 7 days of incubation in HG, LG and FG mediums Significant differences: ***p<0.0001.

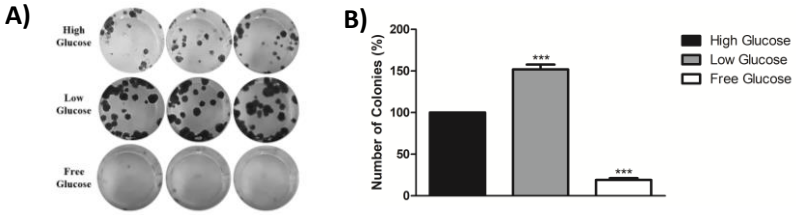
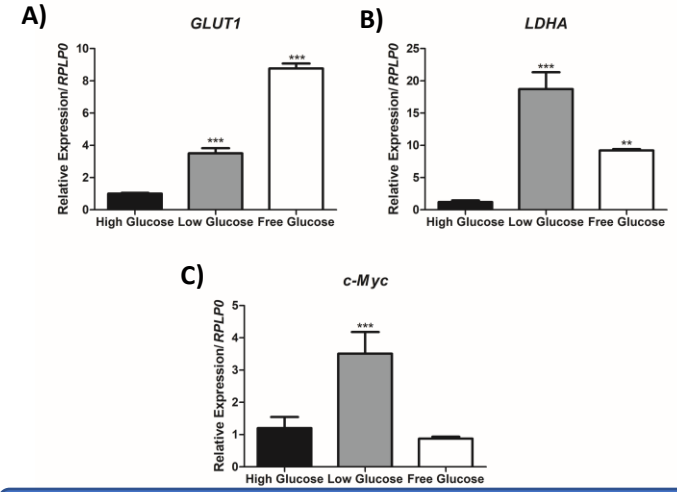


Figure 4. Modulation in glucose concentration alters gene expression in the AGP-01 cell line. After 24 hours of exposure to different glucose concentrations, total mRNA was extracted and transcripts levels of (A) *GLUT1*, (B) *LHDA*, and (C) *c-Myc*, were analyzed.



CONCLUSION AND ACKNOWLEDGMENT

Thus, with the present study, the aerobic glycolytic metabolic profile of the AGP-01 was observed, indicating that *GLUT1* transporter and the *LDHA* enzyme can be good pharmacological targets in GC. LG medium shows to be the best cell culture condition for metabolic studies.

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1- Hanahan D, Weinberg RA. Hallmarks of Cancer: The Next Generation. Cell. 2011;144(5):646–74.
2- Luengo A, Gui DY, Vander Heiden MG. Targeting Metabolism for Cancer Therapy. Cell Chem Biol. 2017;24(9):1161–80.
3- Hirsch C, Schildknecht S. In Vitro Research Reproducibility: Keeping Up High Standards. Front Pharmacol. 2019;10:1484.