THE ROLE OF GLYCOGEN SYNTHASE IN THE ESTABLISHMENT OF HYPERPLASIA BENIGN PROSTATE

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INTRODUCTION:

Age-related benign prostatic hyperplasia (BPH) is a process characterized by the appearance of an enlarged prostate resulting from a hyperplastic process. Studies have shown the relationship between its appearance and an alteration in glucose metabolism, which has led us to study Glycogen Synthase (GS).

Figure 1: Immunohistochemistry against glycogen synthase from a 12-month-old rat. An increase in enzyme expression is observed, although this increase is not in all cells.

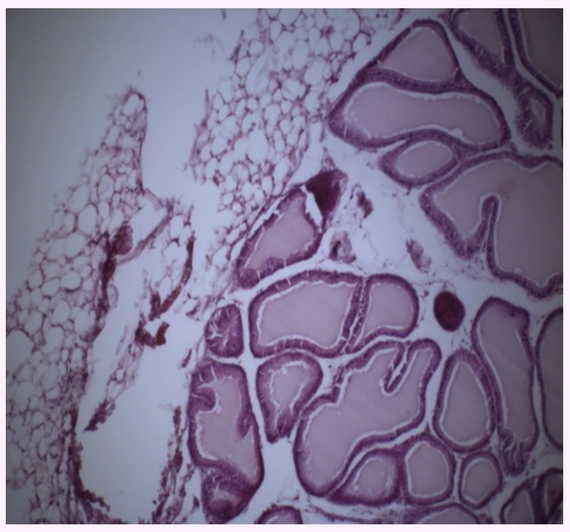

Figure 2: Eosin-hematoxylin staining of a 3-month-old rat. Hyperplasia is not observed.

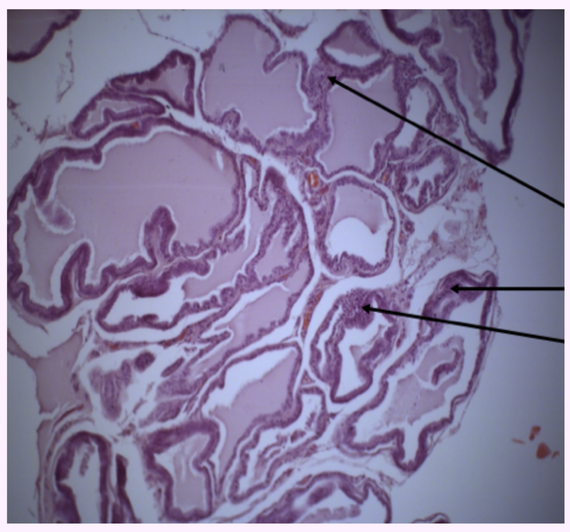

Figure 3: Eosin-hematoxylin staining of a 12-month-old rat. The area marked with an arrow corresponds to areas of hyperplasia.

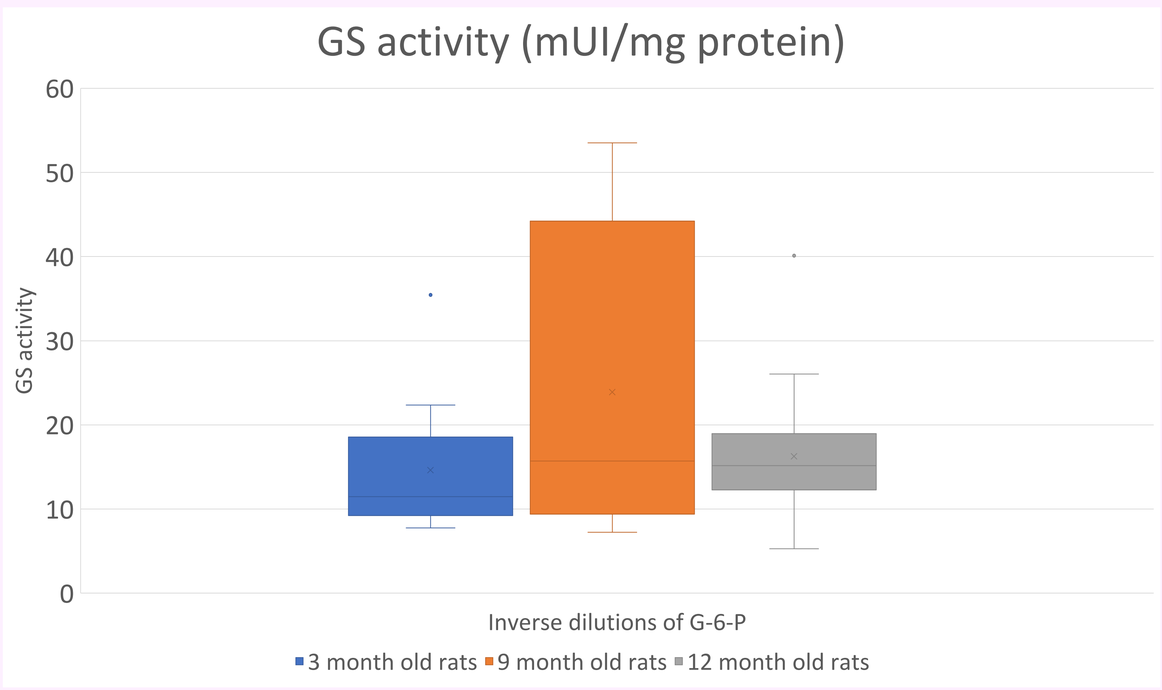

Figure 4: Results of glycogen synthase activity in the rat populations of 3, 9 and 12 months.

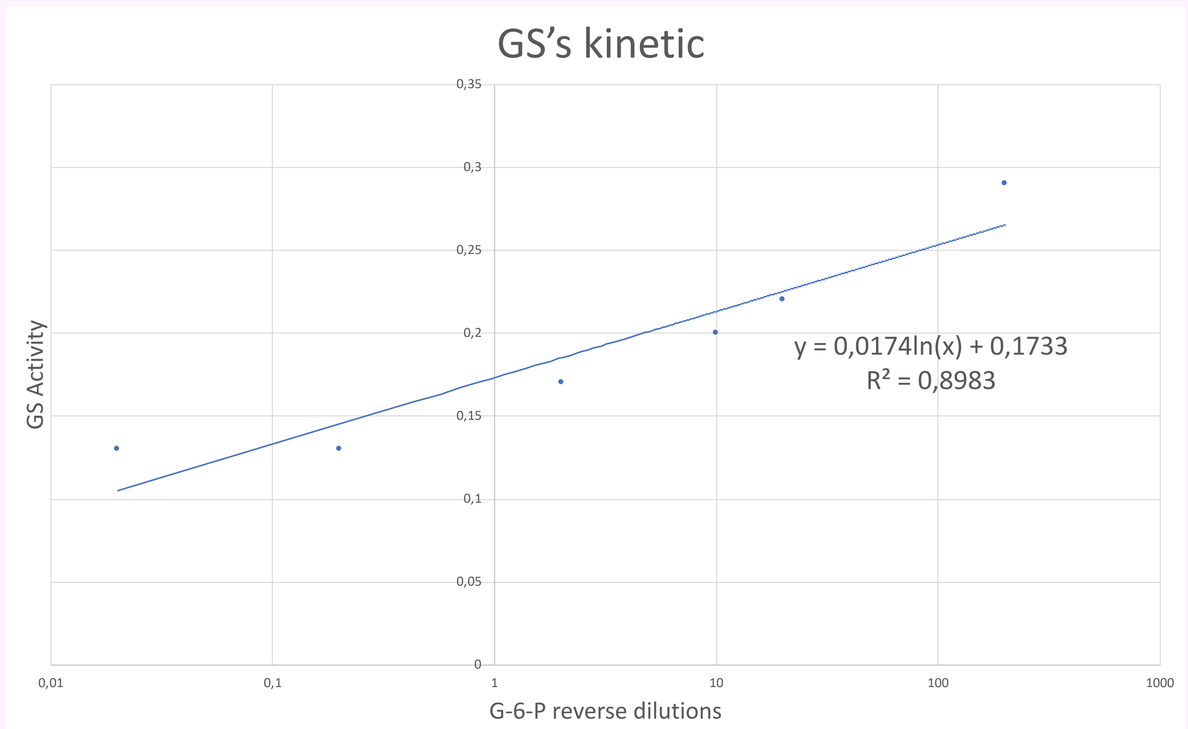

Figure 5: Standard curve made with dilutions of known concentrations.

OBJECTIVES

- Determine whether the appearance of benign prostatic hyperplasia is related to changes in prostatic GS activity, thus indicating the existence of alterations in glycogen metabolism.
- Determine the isotype of prostatic glycogen synthase using a kinetic approach.

RESULTS:

- There are no statistically significant differences between the 3, 9 and 12 month groups, which suggests the increase in GS activity would only happen during the establishment of BPH and, once established, the changes would no longer be noticeable.
- Km of our studio has been 10,04 uM. It is more similar to the GS Km of muscle (4,5-4,8 mM) than of liver (0,12 mM)

CONCLUSIONS:

- The start of a hyperplastic process could coincide with an increase in prostatic GS activity, although this increase would disappear once the process was established.
- The result of the Km calculation indicates that the glycogen synthase of the prostate is from muscle type, which would coincide with a purely energetic utilization of glycogen by the prostatic tissue.