

Diet-induced metabolic syndrome alters bladder urothelium in adult female rats

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INTRODUCTION

In recent years, there has been a constant growth in the prevalence of chronic non-communicable diseases, which even appear increasingly at an earlier age. However, there is a close relationship in the development of these diseases after menopause, related to the estrogenic signaling occurring in various tissues; such is the case of the bladder, compromising its physiology in females. Considering that women are more affected by bladder diseases such as urinary incontinence, it is of relevance to analyze the effect of metabolic syndrome (MS) models of diet through cafeteria diet (CAF) or high fat/high sugar diet (HF/HS) on the bladder urothelium of female rats.

RESULTS

The cafeteria diet was effective in generating metabolic syndrome, with the presence of hyperglycemia, elevated cholesterol, and triglycerides, as well as excess body weight, while the HF/HS diet generated increased body weight and hyperglycemia, but not dyslipidemia. The effect on the urothelium was differential in each treatment, being more affected with the cafeteria diet. Atrophy and hyperplasia were observed in the case of the CAF diet, while the other scheme only generated inflammatory foci, in the case of the CAF diet there is the presence of fibrosis.

Table 1. Parameters measure to identify metabolic syndrome.

Parameter	C n=6	HF/HS n=6	CAF n=6
Average food consumption (Kcal/día)	60.73 ± 0.74 ^a	63.95 ± 1.12 ^a	109 ± 3.24 ^b
Δ Body weight (from week 0 to week 10) gr	38.47 ± 8.41 ^a	52.78 ± 4.96 ^{ab}	77.18 ± 12.02 ^b
Glucose (mg/dL)	112.5 ± 6.22 ^a	148.4 ± 23.54 ^b	195.5 ± 6.36 ^b
Triglycerides (mg/dL)	52.70 ± 3.65 ^a	69.80 ± 5.65 ^a	93.03 ± 2.13 ^b
Cholesterol (mg/dL)	32.60 ± 3.24 ^a	77.97 ± 6.75 ^b	99.12 ± 12.51 ^b

Data are mean ± SEM. Different letters indicate significant differences between groups.

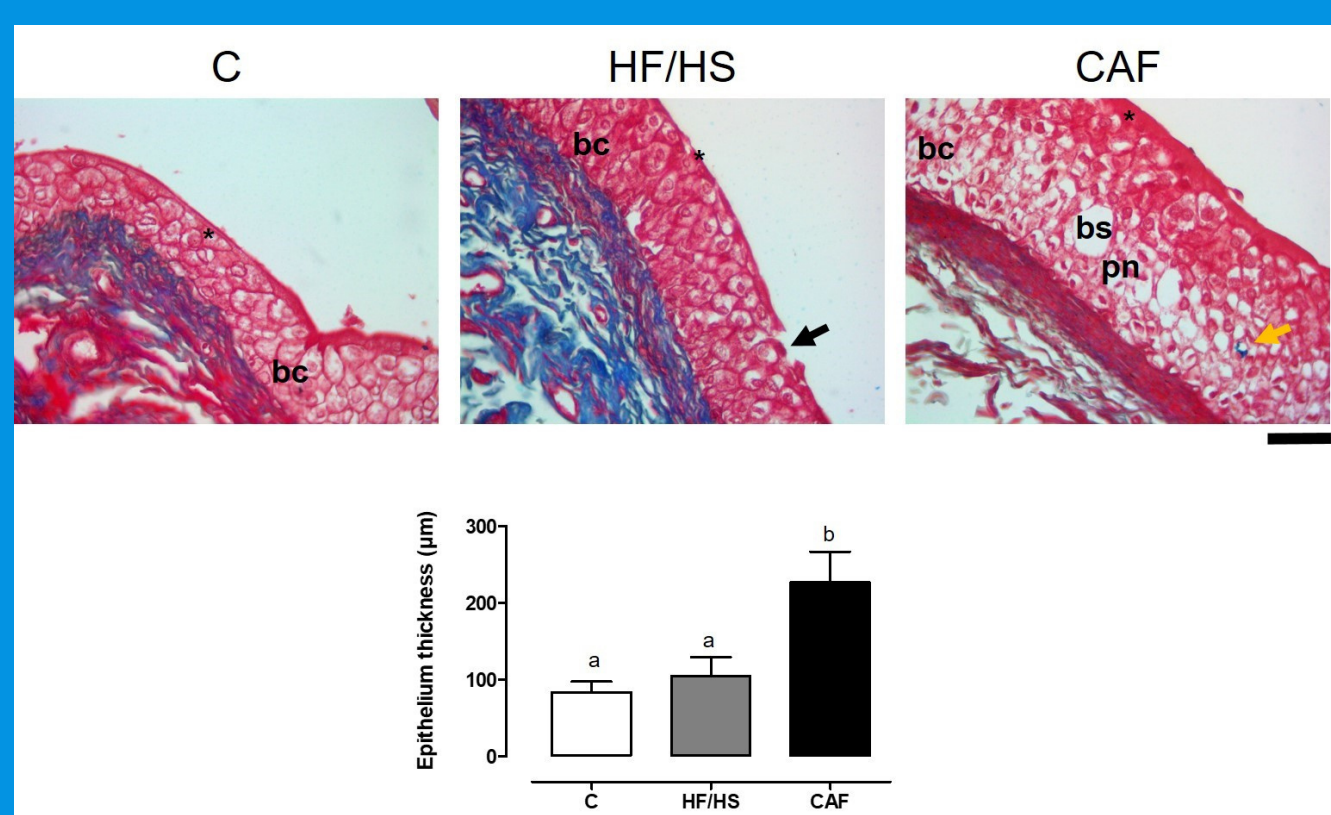
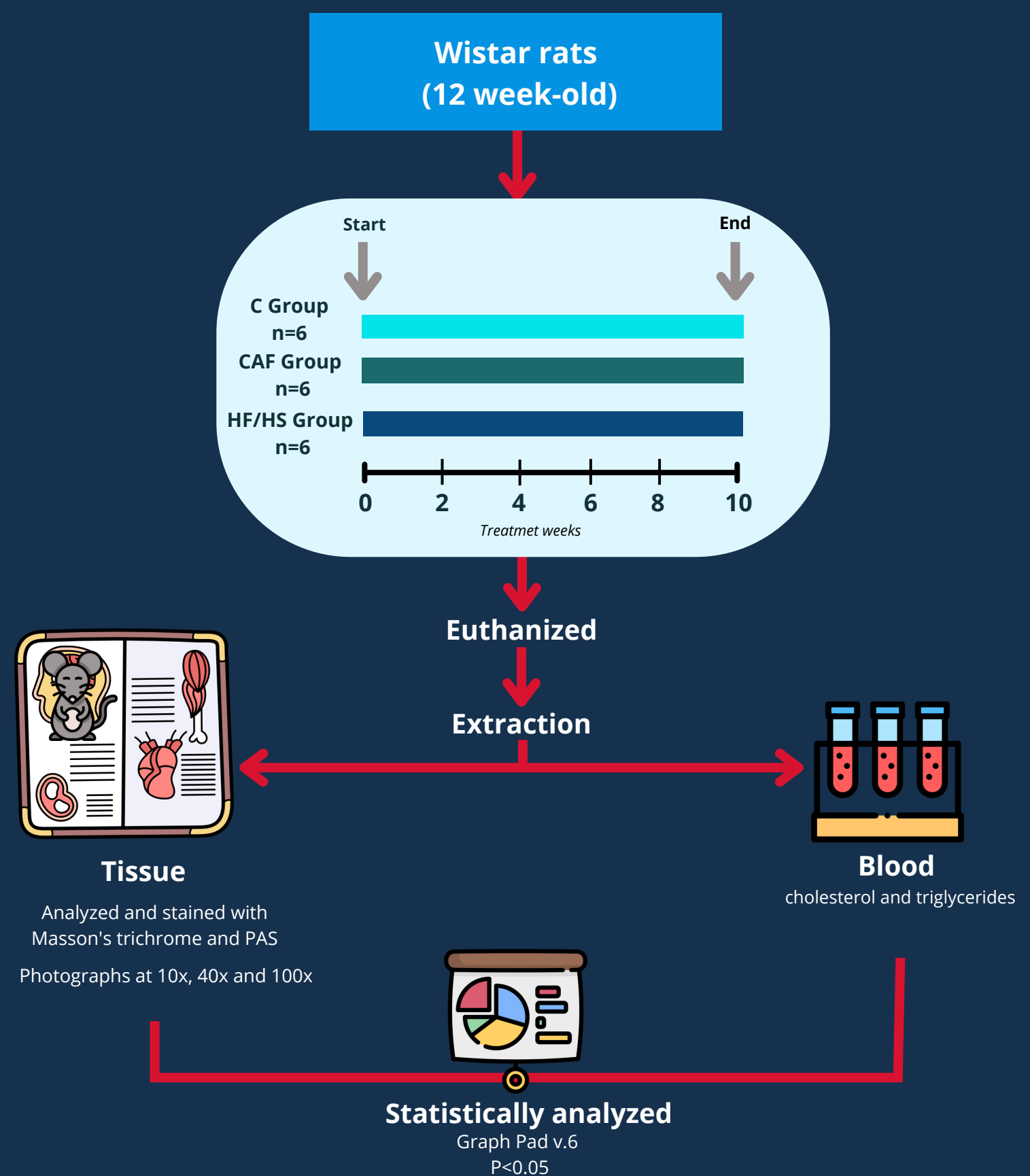


Figure 1. Bladder epithelium from control, HF/HS, and CAF groups. Data are mean ± SEM. Different letters indicate significant differences between groups. Scale: 50 µ. Abbreviation: * umbrella cells; black arrows, areas of desquamation; bc, basal cells, pn, pyknotic nuclei; yellow arrows, fibrosis; bs, blank space.

AIMS

Determine the impact of the different diets that induce metabolic syndrome that altered bladder urothelium in adult female rats.

METHODOLOGY



CONCLUSIONS

The results show that the cafeteria diet is a model that could be more useful to analyze metabolic syndrome in females, compared to other diet-generated models. Further studies are required to analyze the relationship of bladder alterations in females.

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