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Physiological response and organic interactions of Berrycactus in Wistar rats with metabolic syndrome

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INTRODUCTION & AIM

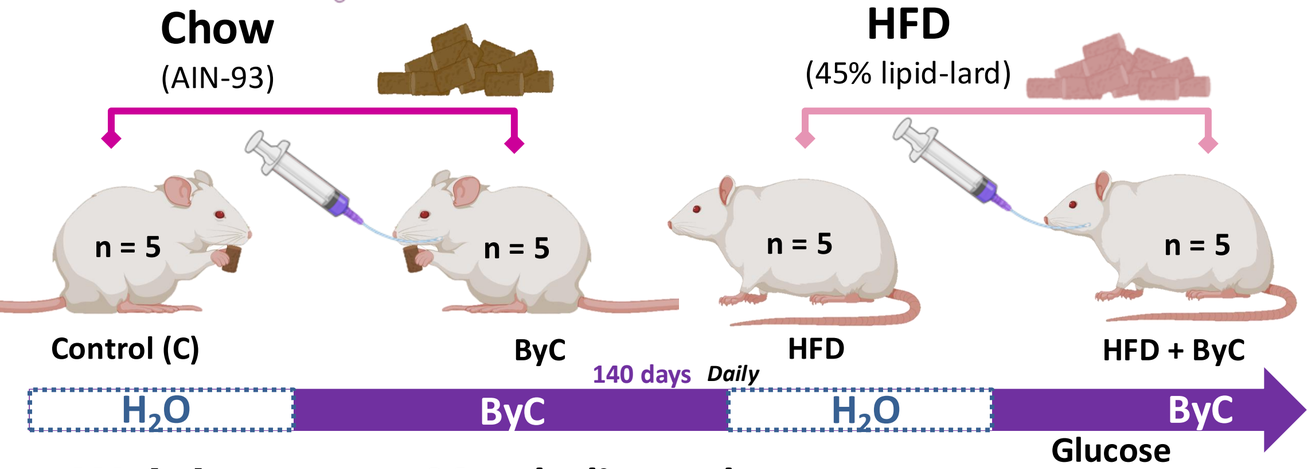
Metabolic syndrome (MetS) is a multifaceted disorder influenced by genetic and environmental factors. MetS involves obesity, dyslipidemia, hypertension, and hyperglycemia, among others. Treating MetS requires a polypharmacy approach, with nutraceutical compounds being explored as potential adjuncts. Berry cactus (ByC; *Myrtillocactus geometrizans*) contains polyphenols, pectins, sterols, and betalains, with hypoglycemic, hypolipemic, anti-inflammatory, and antiproliferative properties.

This study investigates the impact of berrycactus juice concentrated (BJC) consumption on metabolism response and pathway interactions in a rat model of MetS induced by a high-fat diet (HFD).

METHOD

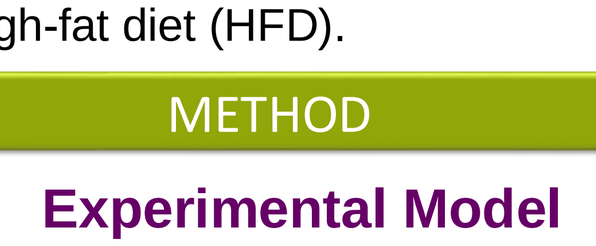
Experimental Model BGFMUASLP-22-24

Wistar male rats



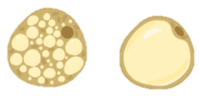
Weight

Metabolic markers

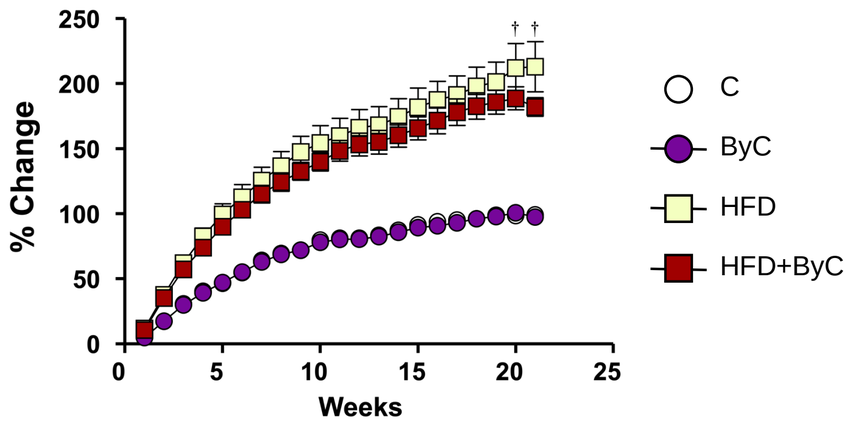


Glucose
Cholesterol
Triglycerides
ALT
AST
Insulin
Leptin
Creatinine
BUN levels

fat content → FOLCH method, Fat area (Histology)

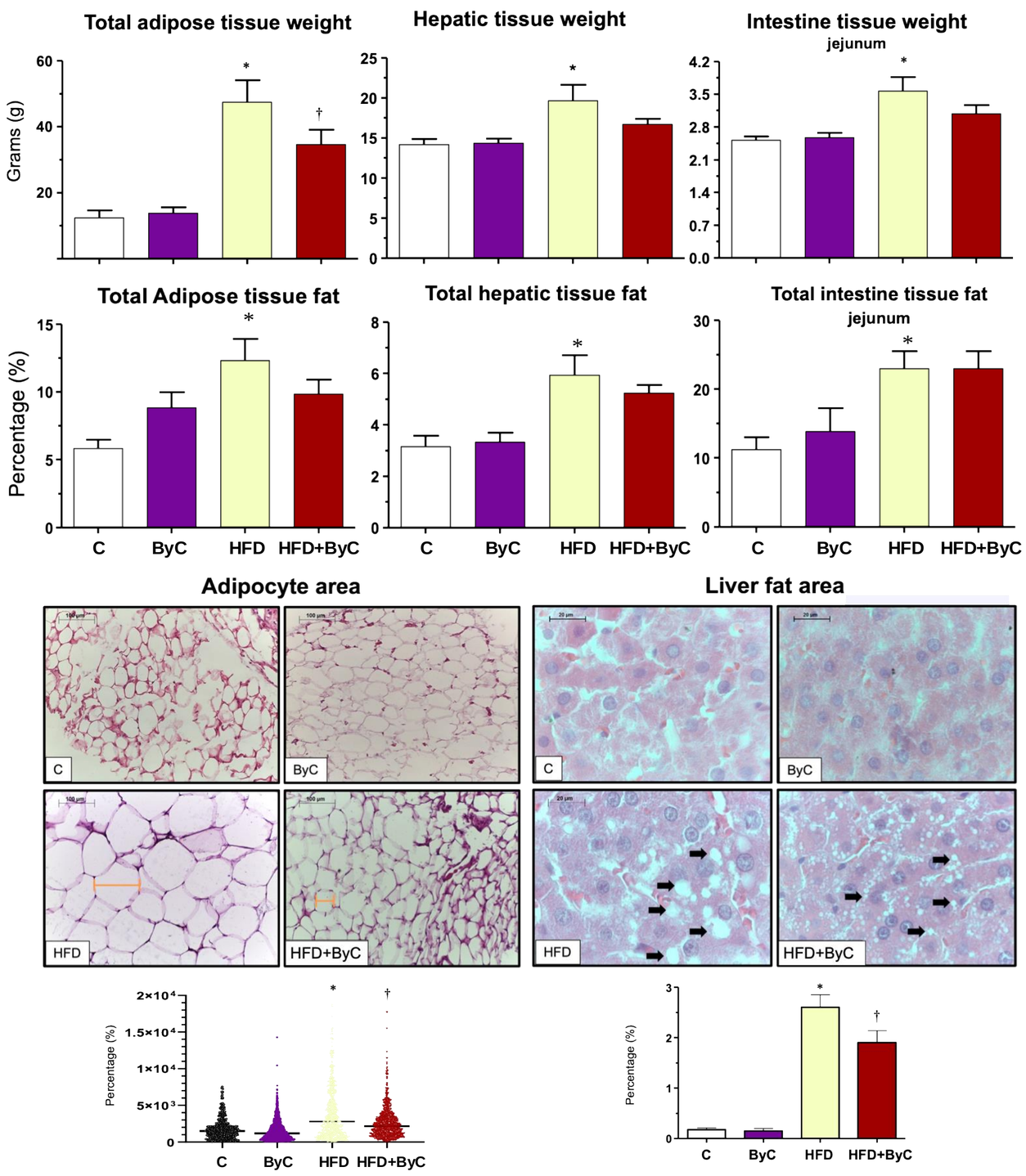


Body weight



RESULTS & DISCUSSION

Biochemical parameter	Control	ByC	HFD	HFD+ByC
Weight (g)	434.80 ± 16.39	440 ± 36.69	679 ± 110.63 *	611 ± 46.82 †
Glucose (mg/dL)	102 ± 14.66	122 ± 39.06	183.50 ± 29.18 *	164.60 ± 9.02
Triglycerides (mg/dL)	71.80 ± 25.03	86.70 ± 32.73	134.40 ± 28.47 *	120.60 ± 31.61
Total cholesterol (mg/dL)	81.68 ± 0.67	71.18 ± 10.58	125.60 ± 33.09 *	88.44 ± 15.54 †
ALT (U/L)	15.05 ± 5.13	11.20 ± 2.52	12.83 ± 5.58	10.38 ± 3.48
AST (U/L)	37.10 ± 8.93	29.05 ± 11.12	36.64 ± 19.21	26.25 ± 6.79
Leptin (pg/mL)	198.35 ± 25.89	185.32 ± 21.49	356.73 ± 156.64 *	269.83 ± 53.02
Insulin (ng/mL)	4.76 ± 3.72	3.89 ± 1.91	19 ± 7.39 *	10.75 ± 2.63 †
Creatinine (mg/mL)	0.51 ± 0.19	0.69 ± 0.11	0.83 ± 0.05 *	0.84 ± 0.17
BUN (mg/mL)	19.18 ± 2.54	24.88 ± 3.15	28.19 ± 2.72 *	21.79 ± 5.41 †



* p< 0.05 *vs*. C and ByC; † p< 0.05 *vs*. HFD

CONCLUSION

Administration of ByC during an obesogenic diet for 20 weeks improved metabolic profile by preventing the increase in body weight, reduced insulin resistance and cholesterol levels, and also, induced the reduction of adipose tissue and adiposity and liver fat area.

FUTURE WORK / REFERENCES

Further research is needed to understand the mechanisms and to identify the metabolite that is responsible for these effects.

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