

Investigations on the Administration of the Dietary Supplement Diavit in Dogs with Diabetes Mellitus

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Abstract Canine diabetes mellitus is a frequent endocrinopathy associated with chronic hyperglycemia, metabolic imbalance, and secondary hepatic, pancreatic, and renal disturbances. The present study evaluated the clinical and paraclinical effects of adjunctive administration of Diavit in dogs diagnosed with insulin-dependent diabetes mellitus. Ten adult dogs (5 males, 5 females), aged 4–16 years, were included. All animals received insulin therapy, dietary management, and oral supplementation with Diavit for 30 days. Hematological, biochemical, glycemic, fructosamine, and ultrasonographic assessments were performed before and after supplementation. Mild reductions in erythrocyte indices and significant leukocyte differences between sexes were identified. Hepatic enzymes were increased in several dogs, suggesting associated hepatopathy. Mean serum glucose decreased from 198.6 to 171.6 mg/dL in males and from 204.5 to 164.9 mg/dL in females after treatment. Fructosamine concentrations also declined significantly within groups ($p < 0.05$). Ultrasonography revealed pancreatic and gastrointestinal abnormalities in selected cases. The results suggest that Diavit may provide beneficial adjunctive metabolic support in diabetic dogs when combined with standard insulin therapy. **Keywords:** hemodynamics, cardiopulmonary syndrome, ventricular adaptation, canine cardiology, vascular overload, prognosis.

Keywords: glycemic control, fructosamine, pancreatic alterations, hepatopathy, insulin therapy

Introduction

Canine diabetes mellitus is a complex endocrine disorder characterized by persistent hyperglycemia secondary to insulin deficiency. The disease is frequently associated with metabolic, hepatic, pancreatic, and renal alterations requiring integrated clinical and paraclinical monitoring.

To evaluate the hematological, biochemical, metabolic, and ultrasonographic alterations identified in dogs diagnosed with type 1 diabetes mellitus and to assess the effects of Diavit supplementation associated with insulin therapy and dietary management.

Material and method

• Study Group

- 10 diabetic dogs (5 males / 5 females)
- ↓ Clinical examination
- ↓ Hematology + Biochemistry
- ↓ Ultrasonography
- ↓ Insulin + Diet + Diavit (30 days)
- ↓ Re-evaluation
- ↓ Statistical analysis

• Therapeutic Protocol

- DIAVIT SUPPLEMENT
- Vaccinium myrtillus L. (bilberry extract)
- + Hippophae rhamnoides L. (sea buckthorn extract)
- ↓ Polyphenols • Anthocyanosides
- Vitamins • Mineral salts
- ↓ Adjunctive therapeutic effect
- ↓ Improvement of glycemic control
- ↓ Support of metabolic homeostasis
- ↓ Association with insulin therapy and dietary management

• Main Investigated Parameters

- RBC, Hb, HCT, WBC
- Glucose and triglycerides
- ALT, AST, ALP
- Lipase, amylase, creatinine
- Fructosamine
- B-mode ultrasonography

• Statistical analysis

- IBM SPSS Statistics software
- ↓ Descriptive statistical analysis
- Mean values
- Standard deviation (SD)
- Standard error of the mean (SEM)
- ↓ Comparative statistical tests
- Independent Student's t-test (males vs. females)
- Paired Student's t-test (before vs. after treatment)
- ↓ Statistical significance $p < 0.05$
- ↓ Graphical representations generated using GraphPad Prism software

Conclusions

- ❑ Canine diabetes mellitus induces significant metabolic and pancreatic alterations.
- ❑ Biochemical and ultrasonographic investigations are essential for disease monitoring.
- ❑ Diavit supplementation contributed to improved glycemic control.
- ❑ Integrated clinical and paraclinical evaluation improves therapeutic management.

Results and discussions

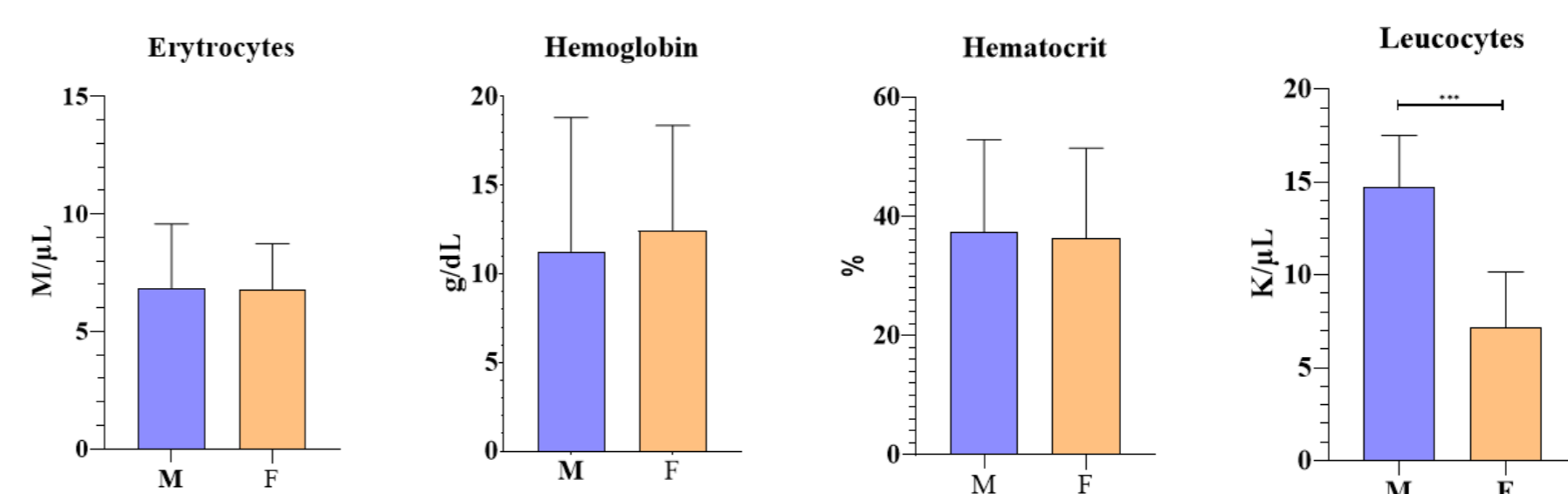


Figure 1. Hematological Parameters

- Erythrocyte count, hemoglobin, and hematocrit values were situated toward the lower physiological reference limit.
- No statistically significant differences were identified between sexes ($p > 0.05$).
- Mild erythrocyte alterations suggested subclinical metabolic impairment associated with diabetes mellitus.
- Mild leukocytosis was identified, particularly in male dogs. Increased leukocyte values suggested chronic inflammatory and metabolic stress associated with diabetes mellitus.
- Significant differences between sexes were observed ($p < 0.05$).

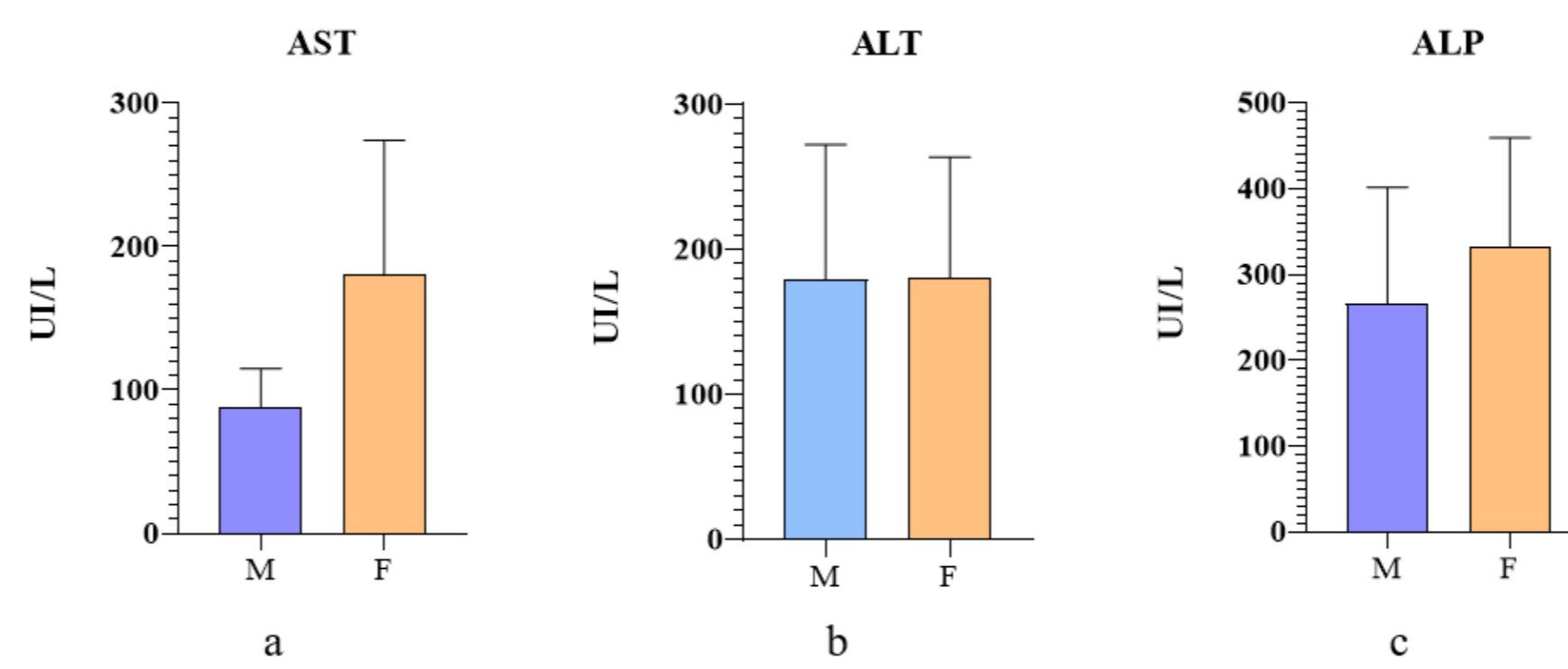


Figure 2. Comparative distribution of hepatic enzyme activities in female and male dogs: ALT, AST, and ALP

- Increased ALT, AST, and ALP activities were identified in diabetic dogs.
- Hepatic biochemical alterations suggested metabolic and hepatocellular impairment associated with chronic hyperglycemia.
- No significant sex-related differences were observed ($p > 0.05$).

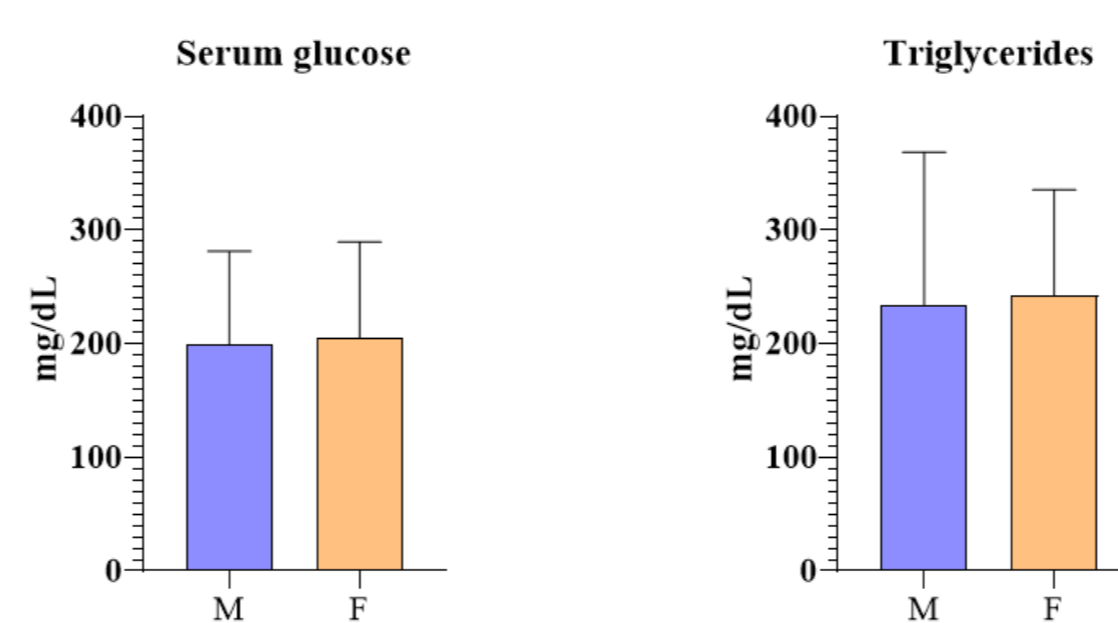


Figure 3. Comparative distribution of metabolic biochemical parameters in female and male dogs: (a) serum glucose, (b) triglycerides

- Persistent hyperglycemia and hypertriglyceridemia were identified in all investigated dogs.
- Metabolic alterations confirmed impaired carbohydrate and lipid metabolism associated with insulin deficiency.
- Females showed slightly greater individual metabolic variability.

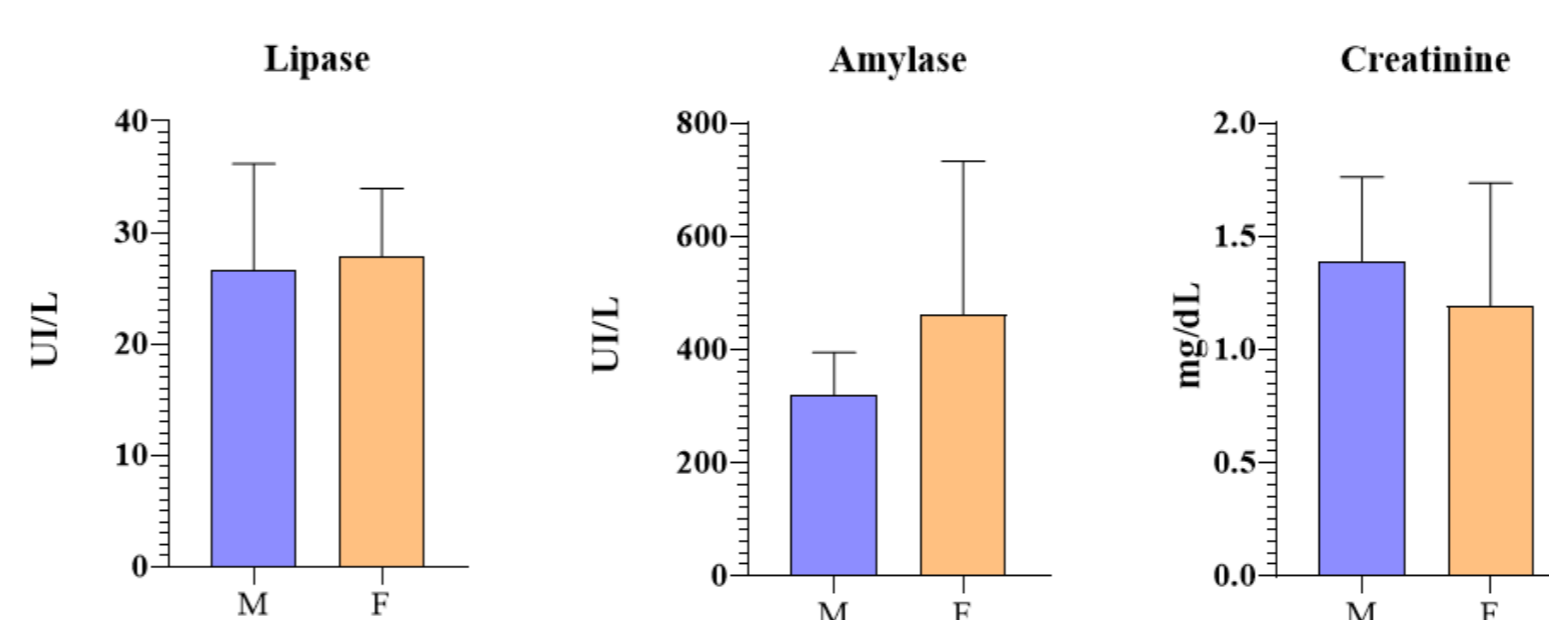


Figure 4. Comparative distribution of pancreatic and renal biochemical parameters in female and male dogs: (a) lipase, (b) amylase, (c) creatinine

- Lipase and amylase values showed moderate variations without marked increases.
- Pancreatic enzyme alterations suggested mild or subclinical exocrine pancreatic involvement.
- No statistically significant differences were identified between sexes ($p > 0.05$).
- Serum creatinine concentrations remained within physiological reference limits.
- Renal filtration function appeared preserved in the investigated dogs.
- Males exhibited slightly greater variability of creatinine values

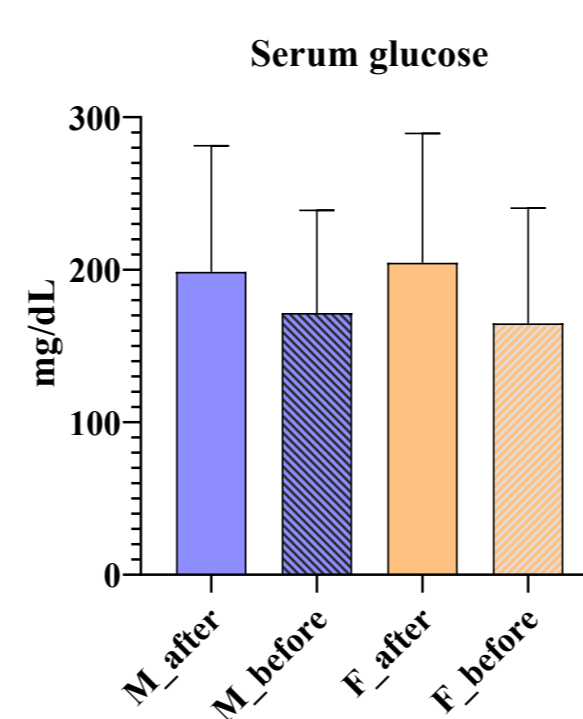


Figure 5. Comparative distribution of serum glucose values before and after Diavit supplementation in diabetic dogs

- Serum glucose concentrations decreased after Diavit supplementation.
- Glycemic values decreased by approximately 27% in males and 40% in females.
- The obtained results suggested improved glycemic control and partial metabolic stabilization.

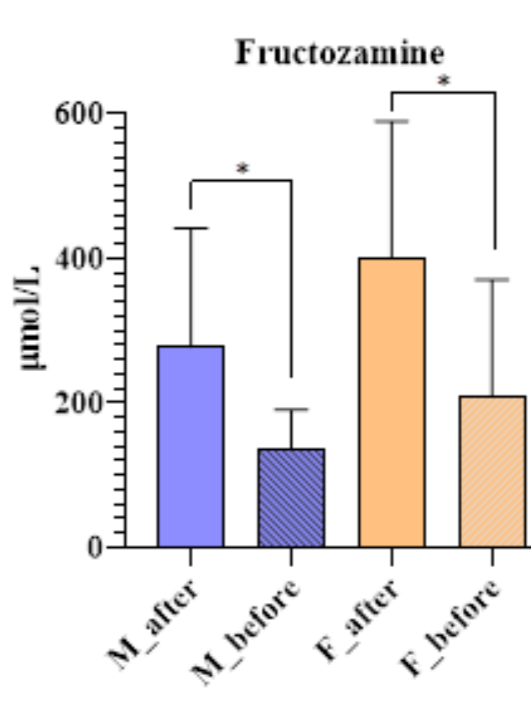


Figure 6. Comparative distribution of serum fructosamine concentrations before and after Diavit supplementation in diabetic dogs

- Serum fructosamine concentrations decreased significantly after treatment ($p < 0.05$).
- Post-treatment values returned within the physiological reference interval.
- The results confirmed improved medium-term glycemic control following supplementation.

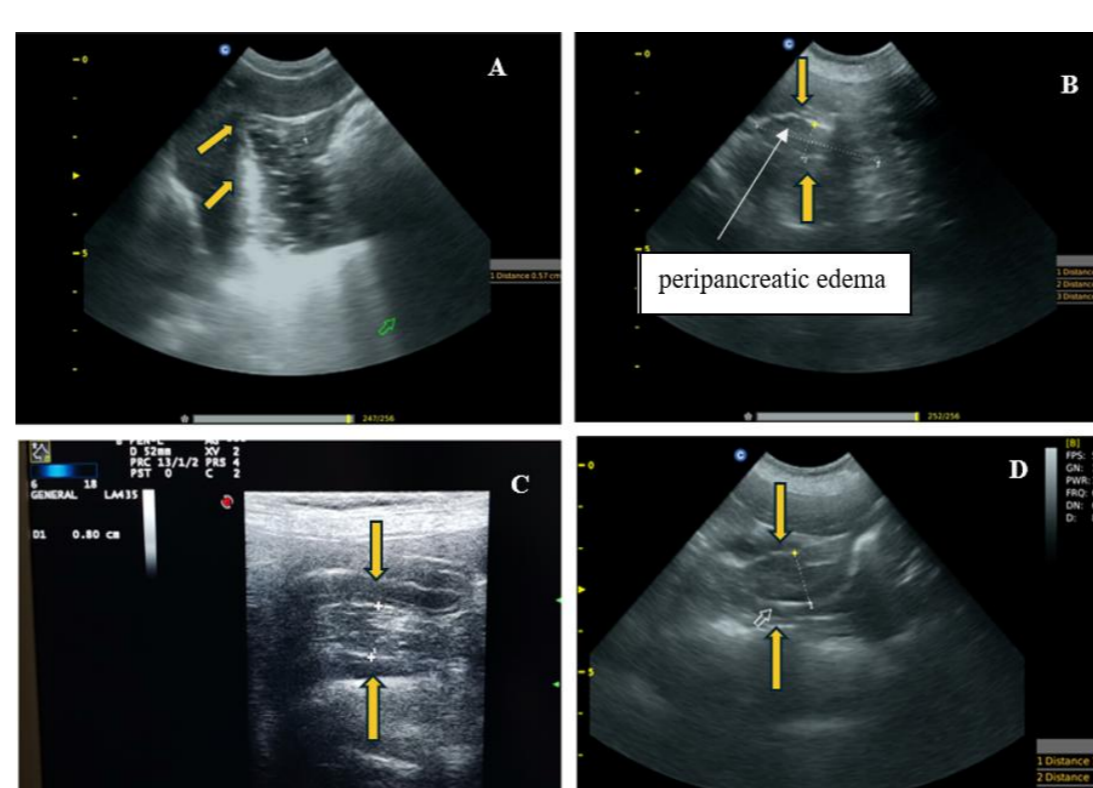


Figure 5. Ultrasonographic examination revealed pancreatic and peripancreatic alterations associated with diabetes mellitus.

- Ultrasonographic examination revealed pancreatic and peripancreatic alterations associated with diabetes mellitus.
- Peripancreatic edema and heterogeneous pancreatic parenchyma suggested inflammatory pancreatic involvement.
- Gastric stasis and fibrotic pancreatic changes were identified in some investigated dogs