Effect of summer months on testicular histoarchitecture and spermatogenesis in Dezhou donkey: A histological study

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Abstract: This study aims to illustrate testicular histoarchitecture and progression of spermatogenesis in Dezhou donkeys during summer months. For experiment, 8 male Dezhou donkeys having body weight 260 ± 20 kg and aged 2 years were analyzed using microscopy and Jonhson's score. Based on acrosomal system, Dezhou donkey spermatogenesis comprised of XII stages. Various types of spermatogonia: A_1, A_2, A_3, B1 and B_2 were observed along with undifferentiated spermatogonia (A_{und}). Testicular histoarchitecture during spermatogenesis, seminiferous tubules diameter (ST), ST height ((μm), Luminal tubulat diameter (μm), No. of ST/field, No. of germ cells alongwith normal Jonhson's score illustrated that stages of spermatogenesis and testicular histoarchitecture of adult Dezhou donkeys are not affected during summer months.

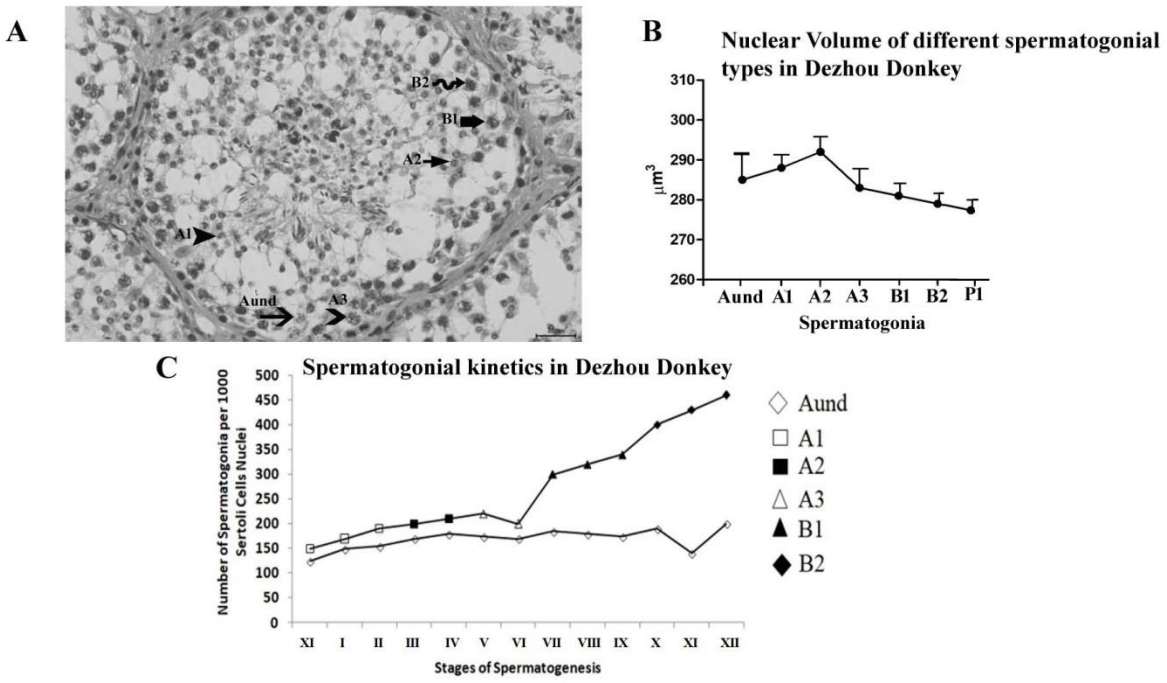

Fig 1: Figure 1A shows various spermatogonia types i.e. A1, A2, B1, B2 and A(undifferentiated). Figure 1B shows nuclear volume of shows spermatogonia nuclear volume (µm3) and 1C shows spermatogonial kinetics in Dezhou donkey

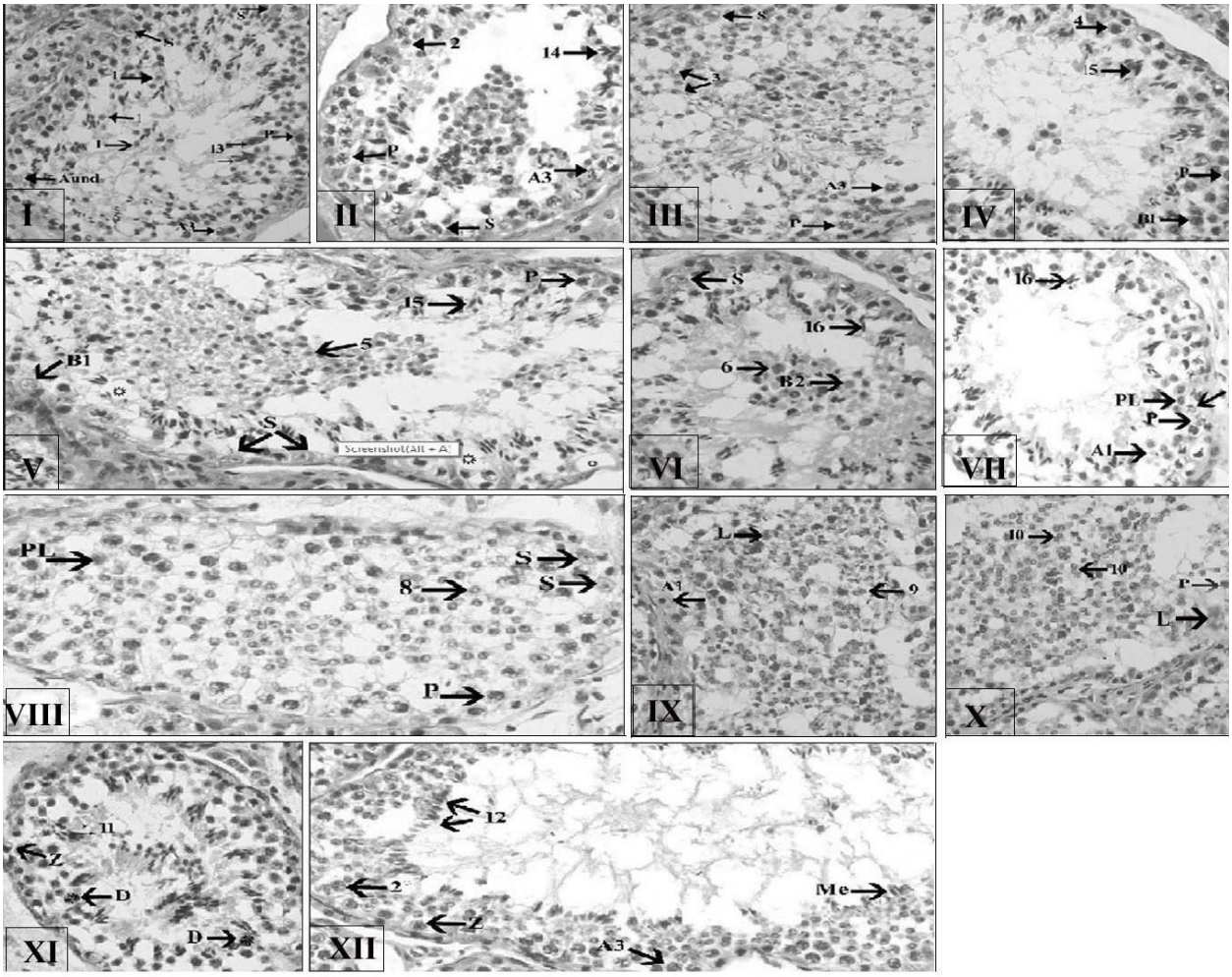

Fig 2: High-resolution light photomicrographies of the XII stages of the donkey's seminiferous epithelium cycle characterized according to the development of the acrosome. Roman numbers indicate the stages of the seminiferous epithelium cycle; Aund, type A undifferentiated spermatogonia ; A1, A3, B1, and B2, differentiated spermatogonia; Pl, preleptotene; L, leptotene; Z, zygotene; P, pachytene; D, diplotene; Me, meiotic. All images were obeserved at 75 µm at 20×.

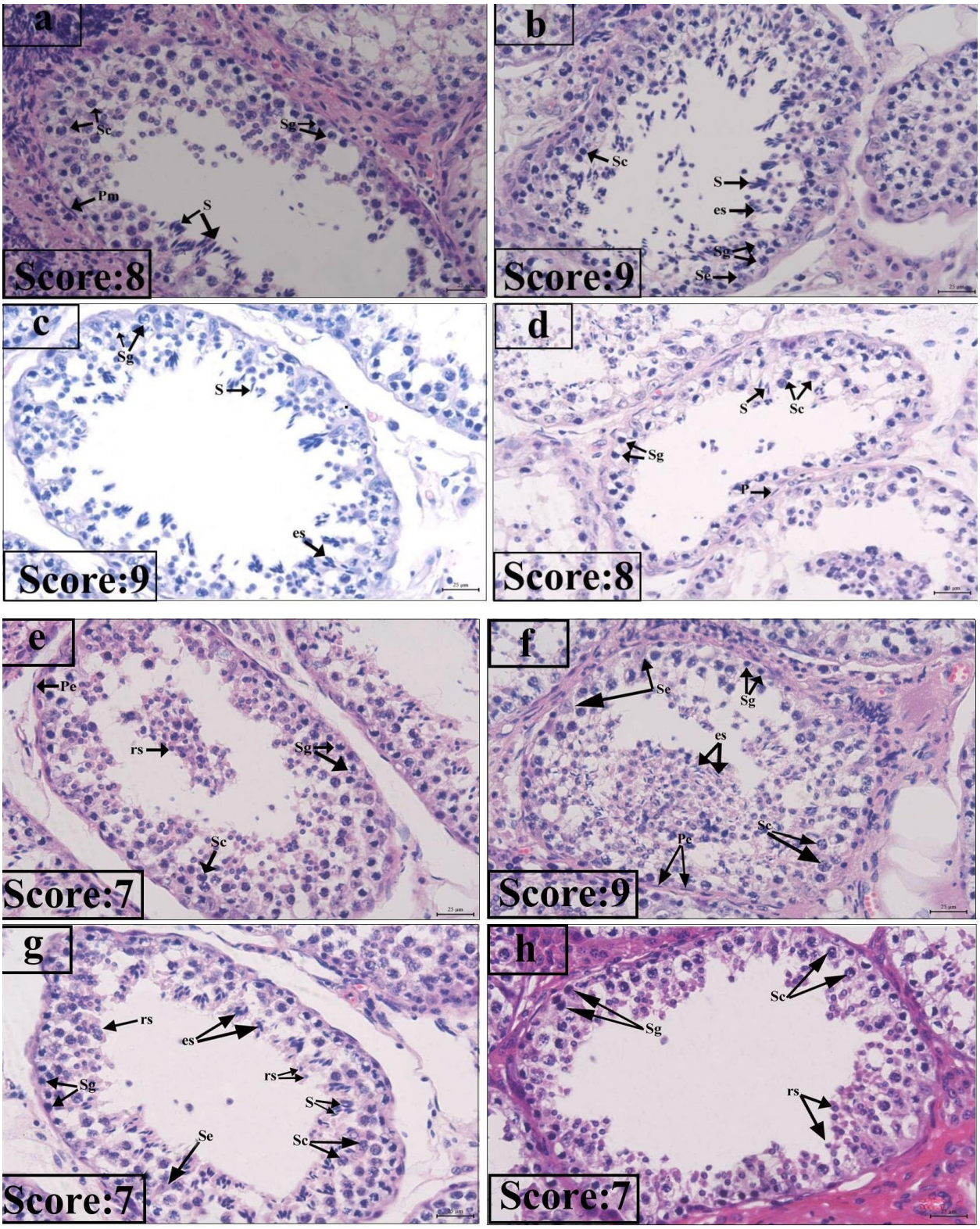

Fig 3: Figures (a-h) depicting jonhson's score. Images (a-h) depicting jonhson's score in 1-8 Dezhou donkeys. Le: leydig cells, S: spermatozoa, es: elongating spermatids, rs: round

spermatids, Sc: spermatocytes, Sg: spermatogonia, Se: sertoli cells. All images were observed at 75 µm at 20 ×.

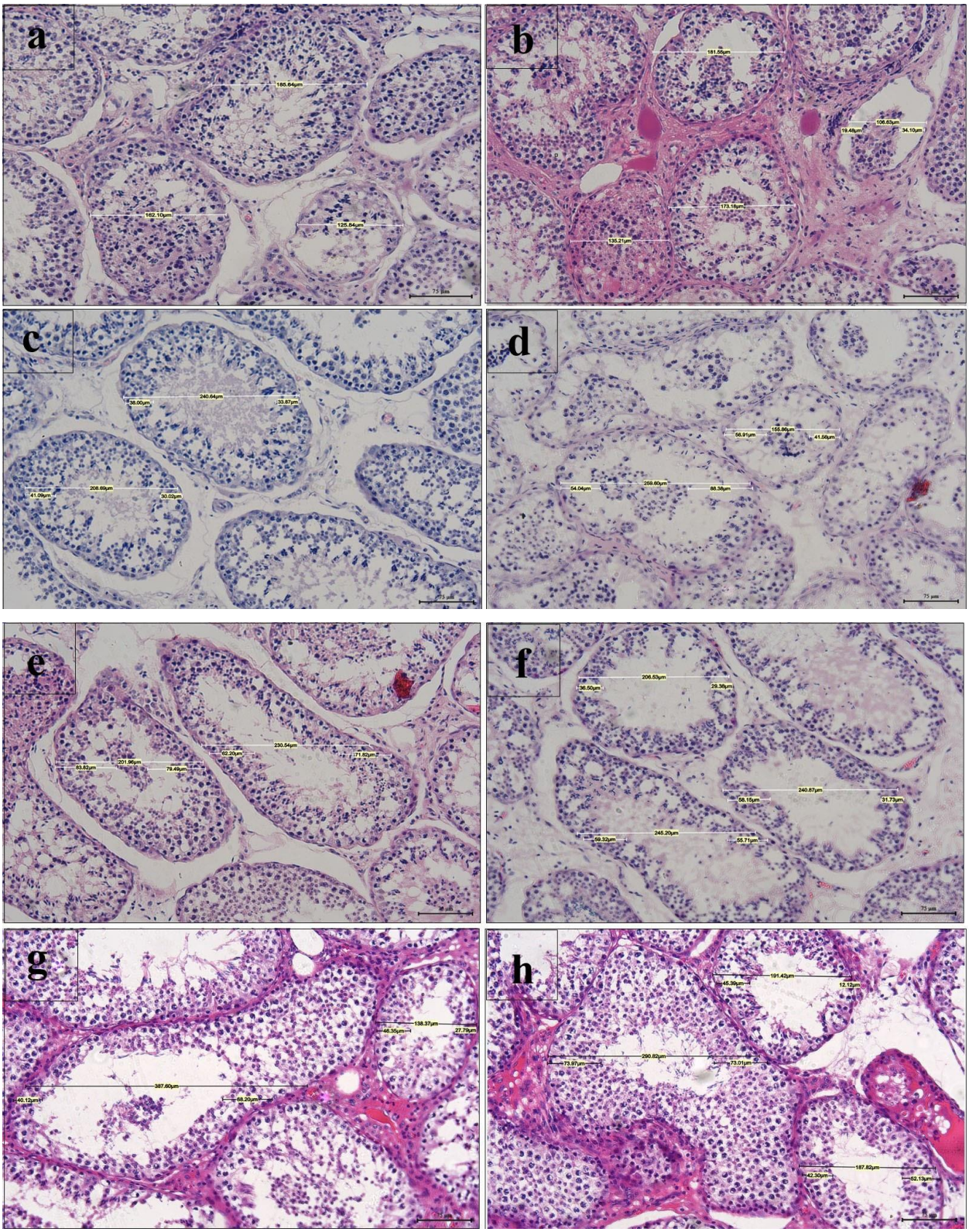

Figure 4: Diameter of seminiferous tubules (ST) µm in 8 Dezhou donkeys. All images were obseved at 100 µm at 10 ×

Parameter	Donkey(n=8)
Age (months)	23.25 ± 0.25
B.W(kg)	260 ± 20
Right Testes Weight (g)	208.33 ± 18.95
Left Testis Weight(g)	230.97 ± 13.83
ST Diameter (um) (Microscope)	199.49 ± 2.82
Seminiferous epithelium height (um)	30.10 ± 10.44
Luminal tubular diameter(um)	107.41 ± 22.31
Number of ST/field	20.21 ± 0.902
No. of Spermatogonia (Image J)	264.62 ± 5.08
No. of spermatocytes	172.51 ± 8.45
Round spermatids	17.50 ± 2.18

Table 1: Biometric and morphometric data in Dezhou donkeys

Conflict of Interest: Authors declare no conflict of interest

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