The objectives of this study were to determine whether IGF-1: i) was expressed in the seminal plasma of peripubertal bulls, ii) could be used as a seminal biomarker for puberty, iii) seminal plasma concentrations could be correlated with breeding soundness examination (BSE) scores and seminal plasma proteins. Semen was obtained monthly from dairy Gir zebu bulls (n=16; 14 to 26 mo old) by electroejaculation. At each collection, all animals were weighed and underwent a complete BSE including: scrotal circumference (SC), sperm motility (MOT), sperm concentration (CONC), seminal volume and sperm morphology (MORPH). The bulls were ranked using a BSE scoring system for zebu breeds (Vale Filho, 1986), where MORPH and SC are scored 0 to 40 pts and MOT 0 to 20 pts. Seminal plasma was harvested (centrifuged 600xg/10min), extended 1:1 (v/v) into a buffer (Tris, CaCl2, NaN2, Pepstatin-A, PMSF), and preserved in LN2. Puberty was defined as described by Wolf et al. (1965). The data were adjusted for age at puberty according to Brito et al. (2004). Seminal IGF-1 was analyzed by RIA and seminal plasma proteins were characterized using SDS-PAGE gels. Data analyses were carried out using SAS (2002). Under these data adjustments, all variables were compared between periods. After adjusting the data according to age in relation to puberty (days) at time 0 (zero) it was carried out a frequency distribution of the ages of the 16 animals using the FREQ procedure. It was adopted as a point of separation of the groups the median, 18 months of age at the time. Thus, animals with age at puberty below the median were considered as precocious (n=8) and those above the median considered regular (n=8). The concentration of IGF-1 was tested for normality using UNIVARIATE procedure. Correlations between parametric variables were estimated by Pearson's correlation coefficient and the associations between the parametric and the nonparametric variables by the Spearman correlation coefficient. Results showing no statistical difference between groups and between sampling periods were pooled for joint analysis. The significance was set at p<0.05. Using SDS-Page gels, 37 bands (6.9 to 236 kDa) were identified, whereas the presence of the bands 112, 27, 18, 12, 11 and 6.9 kDa was significant (p<0.05) and positively correlated with earlier puberty onset (r=0.57 to 0.62), BSE scores (r=0.55 to 0.59) and with IGF-1 concentrations (r= 0.56 to 0.6), whereas the bands 55, 47 and 25kDa presented negative correlations (r= - 0.4 to - 0.6) with puberty onset and IGF-1 and BSE scores. There was positive correlation (r= 0.65) between seminal IGF-1 concentration and BSE score. There were positive correlations (r = 0.7 to 0.82) between body weight and BSE score. In summary, seminal IGF-1 was expressed in increasing concentrations from -60 to puberty onset. Additionally, once IGF-1 presented positive correlation with BSE scores and seminal plasma proteins, we suggest that IGF-1 could be used as indicator of semen quality and puberty onset for zebu dairy bulls.

Keywords: Zebu, breeding soundness examination, puberty, seminal plasma.

Acknowledgements: Research project funded by the CNPq and FAPEMIG