The objective was to determine the mRNA expression and protein levels of uPA system components in tissue specimens and serum samples, respectively, from prostate cancer (PCa) patients and to assess their association with clinicopathological parameters and overall survival (OS). The mRNA expression levels of uPA, its receptor (uPAR), and its inhibitor type 1 (PAI-1) were analyzed in corresponding malignant and adjacent nonmalignant tissue specimens from 132 PCa patients by quantitative PCR. Preoperative serum samples from 81 PCa patients were analyzed for antigen levels of uPA system members by ELISA. RNA levels of uPA system components displayed significant correlations with each other in the tumor tissues. A significantly decreased uPA mRNA expression in PCa compared to the corresponding nonmalignant tissue was detected. High uPA mRNA level was significantly associated with a high Gleason score. Elevated concentration of soluble uPAR (suPAR) in serum was significantly associated with a poor OS of PCa patients (P = 0.022). PCa patients with high suPAR levels have a significantly
higher risk of death (multivariate Cox's regression analysis; HR = 7.12, P = 0.027). The association of high suPAR levels with poor survival of PCa patients suggests a prognostic impact of suPAR levels in serum of cancer patients.