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Seasonal Changes of Neutral α-Glucosidase Activity in Human Semen

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Although there are contradictory reports, the biochemical evaluation of the seminal activity of neutral α-glucosidase (NAG) has repeatedly been described as an important parameter to test epididymal patency and is recommended by the WHO. Because, for a number of diagnostic parameters, seasonal variations have been described even in the human, it was the aim of this study to investigate possible circannual changes of NAG. This is an important aspect of andrological diagnosis, as seasonal changes of specific diagnostic parameters might have an impact on the accuracy and predictive power of these parameters, which in turn might have an effect on the therapeutic concept for the patients. In a total of 473 patients, sperm concentration, volume of the ejaculate, total motility, progressive motility, pH value, number of peroxidase-positive cells, concentration of fructose, and NAG as functional markers of the seminal vesicles and the epididymis, respectively, were analyzed according to standard procedures. Seminal activity of NAG was significantly correlated with the sperm concentration ($P < .0001$), ejaculate volume ($P < .0001$), and the pH ($P = .0025$). Moreover, significant ($P = .0008$) seasonal changes in the activity of seminal NAG with the maximum in spring (76.87 mU/ejaculate) and the minimum in autumn (58.55 mU/ejaculate) were found. The incidence of low-ranged activity of the enzyme was 9.2% in spring, while it was 20.3% in autumn. Thus, our data clearly demonstrate circannual changes of the seminal activity of neutral α-glucosidase. This in turn has clinical impact as the predictive power of the test system changes throughout the year.

Key words: Human spermatozoa, seasonality, ejaculate, epididymal patency