

Test-Strip-Type Salivary Amylase Activity Monitor and Its Evaluation

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The authors have been focusing on the activity of α -amylase in saliva (salivary amylase) with the aim of developing a simple quantitative measurement technique for monitor human stress. However, the measurement of enzymatic activity required a sufficiently large volume of substrate and the realization of quantification also required some mechanism to control reaction time. Moreover, a measurement method using saliva samples should have the merits of simplicity, the ability to yield instant results and the potential to be used any time. Based on this concept, a salivary amylase activity monitor consisting of the test strip, a salivary transcription device and an optical analyzer was fabricated. The calibration curve for the salivary amylase activity monitor obtained an R^2 value of 0.72. The monitor could be used for the analysis of salivary amylase activity. In order to evaluate the monitor, salivary amylase activity was measured using a videotape of corneal transplant surgery as a mental stressor. A significant difference between salivary amylase activity was recognized between the prestress, midstress and poststress periods, and it was confirmed that increasing or decreasing human stress level could be perceived as increases and decreases in salivary amylase activity.

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