

Diagnostic value of the Saxon's test: distinguishing normal controls from patients with sicca symptoms

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Introduction. The Saxon's test is a simple and inexpensive method for quantifying salivary secretion, introduced in 1985 by Kohler & Winter (1,2,3). Our aims in this study were: 1) to evaluate the test as a measure of non-stimulated salivary secretion in normal human subjects and in consecutive patients with sicca symptoms; 2) to verify external influences in test performance, like the use of dental prosthesis, time of the day, gender, age, season of the year and relation to meals.

Materials and methods. Normal human subjects ($n = 193$; 63 men and 130 women, age = 15 to 80 [43.6 ± 16.3] years), patients with sicca symptoms seen at the University outpatient facility (primary Sjögren's syndrome [SS, by the European criteria], $n = 22$; secondary SS, $n = 19$; and patients diagnosed with connective tissue diseases (CTD), $n = 51$; 7 men and 85 women, age = 23 to 74 [45.2 ± 12.1] years) were studied to verify cut-off points. Individuals taking drugs with influence on salivary secretion were excluded. Statistical analyses: ANOVA after Tukey, or Student's *t* test, with $\alpha = 5\%$. Briefly, 4 sterilised gazes were weighted inside a plastic container and again weighted after 2 min of patient mastication without swallowing. Weight variation was taken as a measure of salivary flow.

Results. Average salivary flow in the control population was 4.94 ± 1.98 g (0.92 – 11.29), with lower normal cut-off established at 1.60 g for individuals ≤ 60 years old, and 0.70 g above that age. Primary SS patients had values of 1.51 ± 1.41 g (0.17 – 5.22), and patients with secondary SS had values of 3.35 ± 2.68 g (0.41 – 9.80), numbers statistically significant in relation to controls and between both patient groups. Five normal controls (age = 24.3 ± 6.1 years old, all men) were tested at 11 AM (average salivary flow in 2 min = 5.07 ± 0.33 g, CI = 4.42 – 5.71, CV = 6.5%) and at 5 PM (average salivary flow in 2 min = 4.58 ± 0.32 g, CI = 3.95 – 5.21, CV = 7.0%) during 10 consecutive days. No statistical difference was seen in tests conducted in the morning or in the afternoon. Two patients, 1 with primary SS, the other with no rheumatic or sicca symptoms, were tested at 8 AM, 11 AM, 2 PM, and 5 PM for 4 consecutive days. There was no difference in test results in both patients with advancing hours during the day. Also, 20 sicca patients repeated the test at variable time intervals (from 3 to 6 months), with no differences in their average results (initial = 3.31 ± 2.25 g, final = 3.21 ± 2.42 g). One patient did 4 tests with and without complete dental prosthesis, with no variation in the results. Patients with abnormal test results had a tendency to higher values during fall and winter months, although all individuals with normal test results showed no variation through the year. Also, no differences were observed in patients tested 1 h before and 2 h after major meals. Linearity in 2 normal volunteers showed a linear regression coefficient (r^2) = 0.89 for men and 0.96 for women, with tests done from 30 to 180 seconds. A clear correlation of test results was found with gender and age in normal controls, women less than 60 years old showing higher salivary flow than men.

Conclusions. 1) Saxon's test results are age-dependent, with normal values established at 1.6g for individuals less than 60 years old, and 0.7g for those older than 60. 2) Women less than 60 years old showed greater salivary flow than men. 3) There is no influence of wearing a dental prosthesis, time of the day, or month of the year on test results. 4) The coefficient of variation for the same patient after many months of follow-up was 10%. 5) Linearity was acceptable, with a high correlation between duration of the test in seconds and higher salivary flow. 6) Specificity is 92% for primary SS in relation to controls, and sensitivity is 77% when using a 2.4g cut-off. 7) The Saxon's test may be used as a screening test for rheumatic patients with dry mouth, with higher specificity for the oral component if the cut-off is raised accordingly.

References

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2. Moschner L, Genth E et al. *Mediz Welt* 1990; 41: 325.
3. Trentin F, Staub H et al. *Rev Br Reumatol* 1993; 33: 165.