SALIVARY STEROID PROFILE: THE SIMULTANEOUS QUANTIFICATION ANDROGENS, GLUCOCORTICOID AND MINERALOCORTICOID IN HUMAN SALIVA

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Objective:

Steroid profiling of biological fluids has been used for clinical and diagnostic research since the 1950’s. Most methods focus on blood and urine, however more recently saliva analysis has been utilised as a non-invasive, simple to collect sample for diagnosis of conditions such as Cushings and androgen excess. Despite its ease of collection saliva remains an underutilised biofluid.

To investigate the utility salivary steroid profiling for endocrine research, we aimed to develop and validate a liquid chromatography tandem-mass spectrometry method to quantify salivary androgens,
glucocorticoids, and mineralocorticoids. Furthermore, we aimed to investigate the correlations between urine, serum and saliva steroids.

20 steroids were included in the assay. Calibrants and samples were spiked with isotopically labelled internal standards and extracted using supported liquid extraction with methyl tert-butyl-ether. Analysis of steroids was performed on an Acquity UPLC chromatography system coupled with Waters TQ-XS mass spectrometer. The method was clinically validated.

The lower limit of quantification of the assay was ≤0.2 ng/mL for all steroids. Assay precision of low, medium, and high (0.2, 0.5 and 1 ng/mL) spiked QCs resulted in variation of ≤20%. Calibrations were linear from 0.02-10ng/mL with correlation coefficients (R²) of ≥0.98. Matrix effects, analyte recovery, reproducibility and carryover demonstrated acceptable validation outcomes.

Ten healthy participants provided matched serum, urine and saliva to investigate correlations between the biofluids. 10 of the 20 steroids were detectable in saliva from healthy volunteers.
In future this method will be utilised to obtain a healthy control reference cohort and investigate endocrine conditions.