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Introduction and objectives

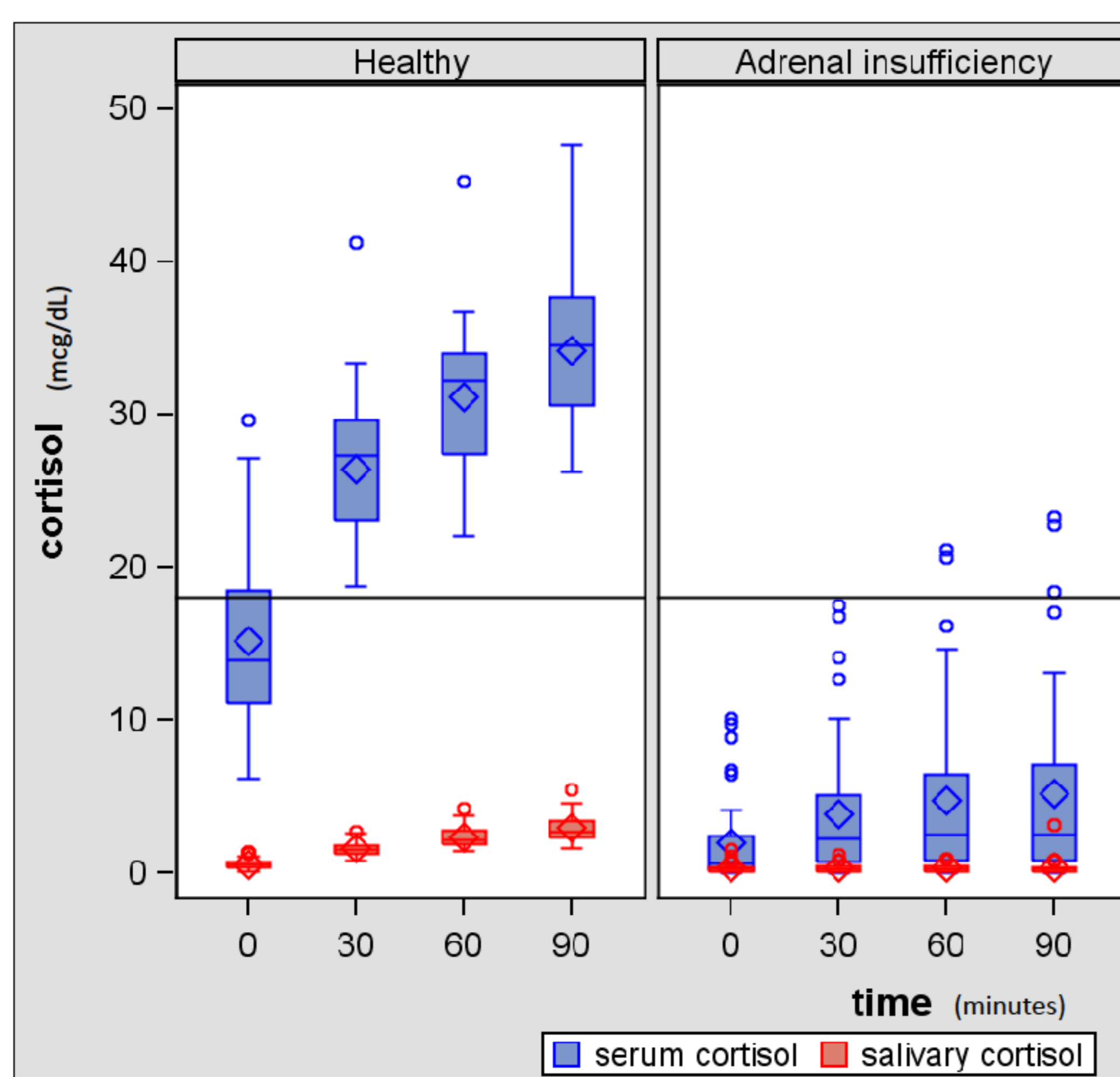
- Most serum cortisol is linked to cortisol binding globulin (CBG) and albumin. When the synthesis of proteins is reduced or increased, serum cortisol (SeC) doesn't reflect the actual free cortisol (FC) (active fraction). Methods for FC analysis are very laborious and expensive, which makes difficult to use them as a routine laboratory tests.
- Salivary cortisol (SaC) mirrors the FC in serum, being its measurement easier and cheaper. The determination of SaC, instead of total cortisol after stimulation with ACTH has been proposed as an alternative for adrenal insufficiency diagnosis, but this test has not been standardized yet.
- The *goal of this study* is to determinate the reference values for SaC after stimulation with 250 µg of ACTH IV and their correlation with those for SeC.

Methods

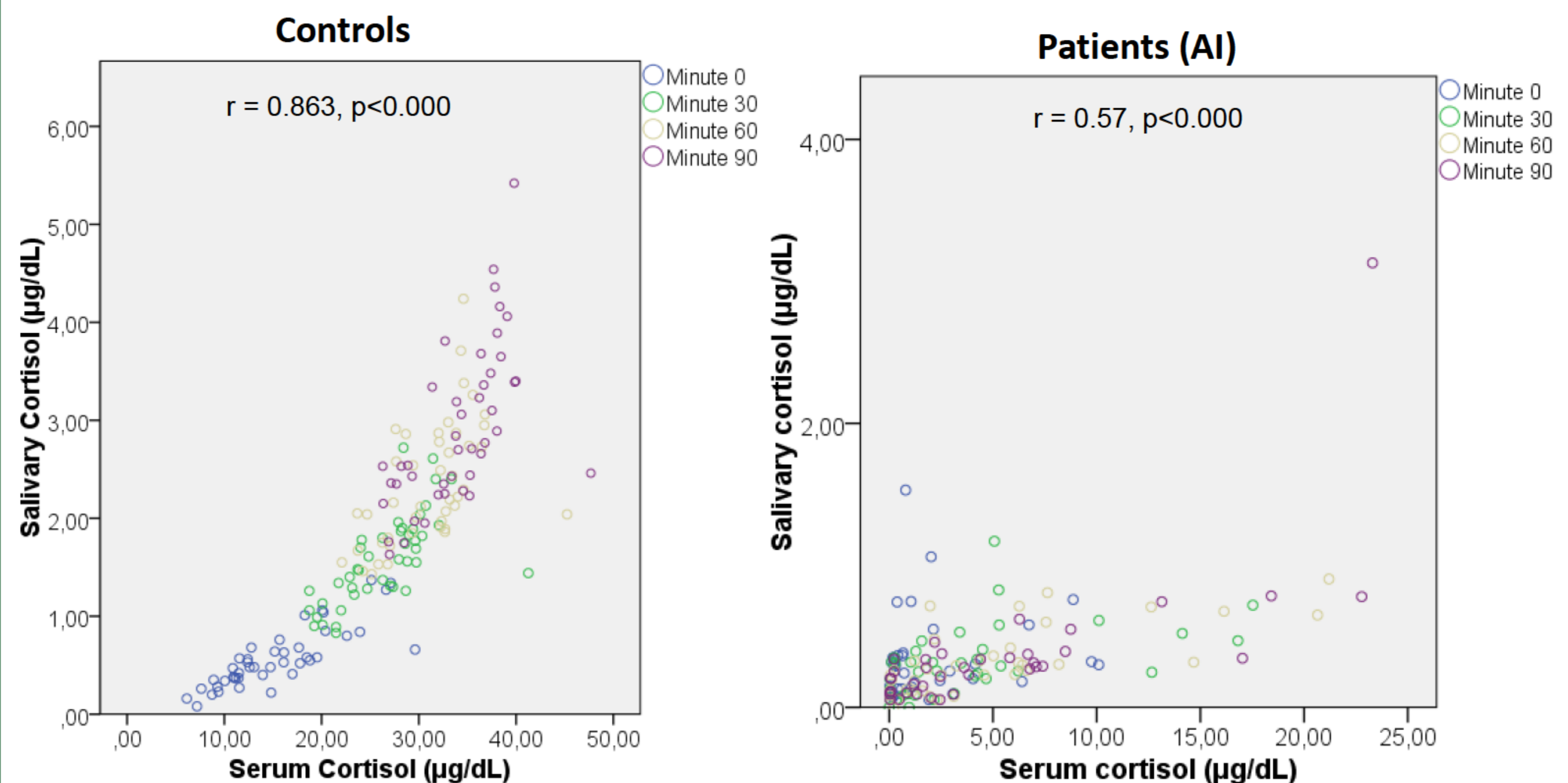
- Forty-five healthy volunteers and 39 patients with known adrenal insufficiency (13 primary, 26 secondary) were included.
- After at least 8 hours fast, serum and saliva samples were collected by chewing for 1-3 minutes the cotton swab Salivette® before and after the administration of 250 µg of ACTH IV for the determination of cortisol in times: 0', 30', 60' and 90'.
- Patients received their last dosage of hidro cortisone at 09:00h the day before.

Results

Salivary cortisol before and after 250 µg ACTH iv



Correlation



- All healthy volunteers had a serum cortisol peak at 30 min ≥ 18 µg/dL
- The salivary cortisol correlated with serum cortisol at all times, except in time 0' for the group of patients.
- Healthy volunteers lower limit value salivary cortisol at 60 min was 1.43 µg/dL.
- This cut-off classified all patients correctly.

Conclusions

- Measurement of salivary cortisol offers an alternative to serum cortisol ACTH stimulation test (250 µg).
- We suggest that adrenal insufficiency can be excluded when salivary cortisol at 60' is ≥ 1.43 µg/dL.

References

1. Rosner W. The functions of corticosteroid-binding globulin and sex hormone-binding globulin: recent advances. *Endocrine Reviews* 1990; 11: 80-91.
2. Vincent et al. Serum total cortisol and free cortisol index give different information regarding the hypothalamus-pituitary-adrenal axis reserve in patients with liver impairment. *Annals of Clinical Biochemistry* 2009; 46: 505-507.
3. Raff H et al. Utility of salivary cortisol measurements in Cushing's syndrome and adrenal insufficiency. *J Clin Endocrinol Metab* 2009; 94:3647-3655.
4. Deutschbein T et al. Diagnosis of secondary adrenal insufficiency in patients with hypothalamic-pituitary disease: comparison between serum and salivary cortisol during the high-dose short Synacthen test. *Eur J Endocrinol* 2009; 160:9-16.
5. Neary N, Nieman L. Adrenal insufficiency: etiology, diagnosis and treatment. *Curr Opin Endocrinol Diabetes Obes.* 2010 Jun;17(3):217-23.
6. J. Gonzalez et al. Establishment of reference values for standard dose short synacthen test (250 µg), low dose short synacthen test (1µg) and insulin tolerance test for assesment of the hipotalamo-pituitary-adrenal axis in normal subjects. *Clinical Endocrinology (Oxf)* 2000, vol 53, 199-204.

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