

## Analysis of acute and chronic stress by quantification of cortisol in saliva and hair, BDNF in saliva and analysis of Val66Met the BDNF polymorphism in graduating: announcement of a pilot study.

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### Abstract

Cortisol is considered as the stress hormone. BDNF is involved in plasticity, including memory, learning and sleep. The hair cortisol assess chronic stress. Our goals are the standardization of cortisol quantification techniques in hair (chronic), BDNF in saliva and the polymorphism identification in this population.

*Key words: Salivary Cortisol, Hair Cortisol, BDNF, Stress.*

### Introduction

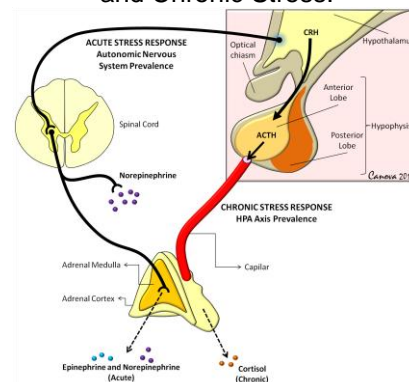
Cortisol is associated with the maintenance of the balance of organism<sup>1</sup>. The human body produces about 10 mg cortisol daily, obeying one rhythmicity. However, excessive or insufficient amounts of cortisol in the systemic circulation are under stress conditions. Although acute changes in cortisol concentrations did not induce immediately a disease, long-term changes are associated with adverse health outcomes.

The Brain Derived Neurotrophic Factor (BDNF) is involved with various functions, especially with the processes related to plasticity, including memory, learning and sleep. It's also suggested the involvement of this neurotrophin in the functioning of the hypothalamic-pituitary adrenal axis, and more recently in the individual's ability to adapt to a new situation<sup>1</sup>.

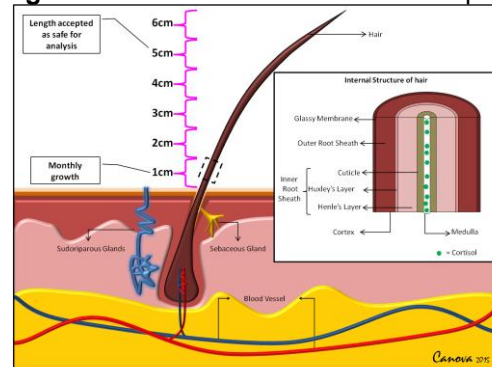
### Results and Discussion

The results of this study are expected to standardize the quantification of cortisol in hair techniques, BDNF in saliva and deployment polymorphism analysis. It is expected to identify the presence of Val66Met polymorphism that is associated with performance degradation and appearance of anxiety or depression after psychological stress. These analyzes will be part of a larger study evaluating the impact of graduates in psychosocial stress, acute and chronic, in learning and memory, sleep quality associated with biological indicators. The innovation of this study is the association of neuroscience and endocrinology that at stress and memory field must be closely related.

**Image 1: Hypothalamic-pituitary-adrenal: Acute and Chronic Stress.**



**Image 2: Structure of hair and cortisol deposite.**



### Conclusions

With the information provided, it is clear the importance of holding these previous studies to standardize the techniques used. Furthermore, the obtained information may be used to improve the quality of life of students.

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<sup>1</sup> Liston, C.; McEwen, B. S.; Casey, B. J. PNAS. 2009 20;106(3):912-7.