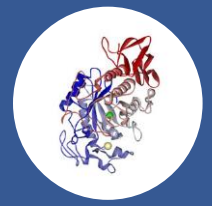


SALIVARY ALPHA-AMYLASE

QUICK START GUIDE



BIOLOGICAL CONSIDERATIONS

Alpha-Amylase (or α -Amylase) is the most prevalent enzyme in oral fluid. The secretion of alpha-amylase from the salivary glands is regulated by the sympathetic branch of the autonomic nervous system. For this reason, salivary alpha-amylase has been extensively applied in biobehavioral research as a surrogate marker of sympathetic nervous system activity. It is commonly employed alongside cortisol because studies show that symmetry between the sympathetic nervous system and hypothalamus-pituitary-adrenal response to stress is an important predictor of outcomes. In the context of oral biology, alpha-amylase plays an important digestive and anti-bacterial role. It is largely responsible for enabling calories to be drawn from the consumption of carbohydrates and complex sugars.

Biological Representation	Indirect representation of the autonomic nervous system activity and regulation
Production Alpha-Amylase	Saliva: acinar cells of salivary glands

SAMPLE TIMING AND DESIGN

Salivary α -amylase levels exhibit a diurnal rhythm, with a pronounced decrease within 60 minutes after awakening and a steady increase of activity during the course of the day. The production of salivary alpha-amylase increases rapidly (within minutes) in response to arousal, and typical of autonomic nervous system activity (and in contrast to cortisol) arousal can be either positive or negative valence. The physical linkage between the autonomic nervous system and sAA production is not mature at birth and there are developmental differences in sAA levels that extend through the first years of life. Alpha-Amylase production is more pronounced for some salivary glands than others and maybe flow rate dependent.

FREQUENTLY STUDIED WITH

Cortisol

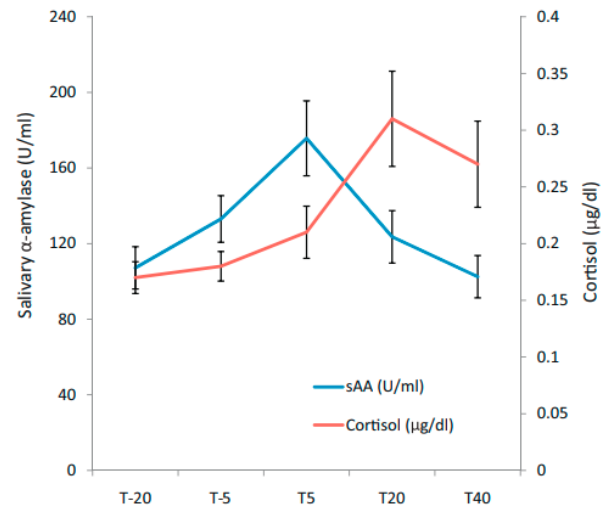
TECHNICAL SUMMARY

Sample Collection Methods & Volumes	
Passive Drool	✓
SalivaBio Swabs	✓
Optimum Collection Volume	25 μ L*

*Add 300 μ L to the total collection volume for all analytes of interest.

EXAMPLE DATA

Findings presented by McGraw et al (2013) illustrate salivary alpha amylase begins to decline at 5 minutes and cortisol declines 20 minutes post a stimulated combat stressor in army nurses.



Source: McGraw et al (2013)

KEY RESOURCES

- Granger, DA, Taylor, MK. (2020). Salivary Bioscience: Foundations of Interdisciplinary Saliva Research and Applications. Springer. <https://springer.com/book/10.1007/978-3-030-35784-9>
- McGraw, L. K., et al., (2013). Nature, correlates, and consequences of stress-related biological reactivity and regulation in Army nurses during combat casualty simulation. *Psychoneuroendocrinology*, 38(1), 135–144.
- Granger, DA., et al., (2007) Salivary alpha-amylase in biobehavioral research: Recent developments and applications. *Ann N Y Acad Sci*, 1098, 122-44
- Granger, D.A., Kivlighan, K.T., El-Sheikh, M., Gordis, E., & Stroud, L.R. (2007). Salivary alpha-amylase in biobehavioral research: Recent developments and applications. *Ann* 44.

