



UNDERGRADUATE

INTRODUCTION

- Overtraining → inadequate rest for recovery → chronic stress → **dysregulated cortisol secretion** → immunosuppression and catabolic state → reduction in sport performance [1].
- Omega-3 fatty acids & Bioactive peptide** [2, 3]:
 - Shows **anti-oxidative and anti-inflammatory** in several antioxidative enzyme and oxidative biomarker level
 - Potentially** assist the athletes in handling training load or stress better and recover faster to **achieve an optimal performance by suppressing cortisol secretion**
- Advantages of saliva collection upon blood collection** [4]:
 - Non-invasive
 - Convenient
 - Simple to perform without a medical professional
 - Able to perform off-lab setting
- Limited studies** conducted in **Malaysian** and the **suppressive effect upon cortisol is unsure**.
- No studies looking at the correlation between salivary and serum cortisol among **Malaysian athlete's population**.

OBJECTIVE

General Objective

To assess the **salivary cortisol level** among Malaysian footballers.

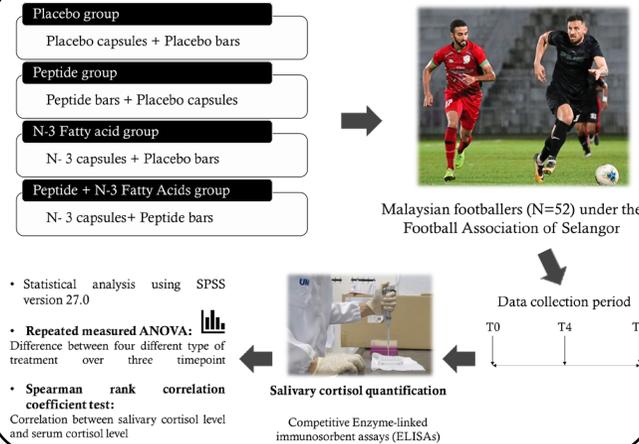
Specific Objective

- To evaluate and compare the **effect of 4 and 8 week of supplementation** (Placebo, n-3 fatty acid, bioactive peptide and n-3 fatty acid + bioactive peptide) on **salivary cortisol level** among Malaysian footballers.
- To assess the **correlation between salivary cortisol level and serum cortisol level** among Malaysian footballers.

SUBJECT CRITERIA

Inclusion criteria	Exclusion criteria
Male	Psychological disorders
Young adult (aged 18 to 30 years)	Chronic diseases
Malaysian athlete	Omega-3 fatty acids intolerance
Team sport player	-
Healthy with no known medical complications	-

METHODOLOGY



RESULTS

- Mean of salivary cortisol level among the 52 subjects in baseline: 9.07 ± 7.29
- Correlation between serum cortisol and salivary cortisol:

Table 1: Correlation between Serum cortisol and salivary cortisol overtime

Time	Spearman's Correlation	p value
Baseline	0.516	<0.001
Week 4	0.384	0.005
Week 8	0.459	<0.001

Table 2: Repeated measures ANOVA for Salivary cortisol (nmol/L)

Time	p value
Treatment	0.751
Time	0.005
Time* ^a Treatment	0.859

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DISCUSSION

- No significant change** of salivary cortisol level between the four treatment groups after 4th week and 8th week of treatment.
- Significant salivary cortisol increment overtime** but the changes was **not relates to the treatment**
- There is a **positive association** between **salivary and serum cortisol**.

Possible reason causing salivary cortisol to increase overtime:

- Preparatory stage of competition**, higher physical and mental demand progressively
- Contract renewal season**, stress on maintaining an optimal fitness and sport performance

Possible reason causing ineffective treatment effect/low correlational strength:

- Insufficient dosage
- Insufficient treatment period to show changes
- Uncontrolled rest one day before testing [5]
- Geographical and sociocultural difference
- Misinterpretation due to saliva sample contamination by blood and phlegm [6]



CONCLUSION

- No significant effect of **4 and 8 week of supplementation** (Placebo, n-3 omega fatty acid, bioactive peptide and n-3 omega fatty acid + bioactive peptide) on **salivary cortisol level** among Malaysian footballers overtime.
- Positive correlation** between **serum and salivary cortisol**

Strength

- First study** looking at the salivary cortisol level among Malaysian footballer
- Homogenous subject (may wave off a lot of confounding factor)
- Saliva collection time were standardized

Limitation

- Limitation of secondary data analysis (uncontrollable, unchangeable preanalytical error/study design)
- Uncontrolled fluid, dietary intake and physical activity 24 hours prior testing [5, 7]
- Single sex population under single location, result may not represent Malaysian norm.

Recommendation for future work

- Identify the effective dose and time period among Malaysian population (treatment with different dosage)
- Conduct similar study in a larger sample size
- Ensuring good management of rest and recovery prior to lab test
- Selection of Heterogenous subject (e.g. sex, area of living)

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