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# PLASMA FREE AMINO ACID PROFILE IN ORAL SQUAMOUS CELL CARCINOMA (OSCC) USING HIGH PERFORMANCE LIQUID CHROMATOGRAPHY (HPLC)

by

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# ABSTRACT

**BACKGROUND AND OBJECTIVES:** Oral cancer inflicts a substantial challenge worldwide being a highly lethal and disfiguring disease. Delayed diagnosis has kept the mortality high. Free amino acids (PFAAs) circulate throughout the body, participating in metabolism. Subsequently, changes in PFAA profile might mirror cancer induced protein metabolism. Compared to studies conducted on AA profile in other malignancies, the correlation in OSCC remains in infancy. In this context the objectives and aims of the study are to quantify, compare and correlate PFAAs level in OSCC and control group using HPLC, for improving diagnosis and providing novel insights about OSCC metabolism.

**METHODOLOGY:** A total of 60 samples: 30 OSCC subjects and 30 age and sex matched healthy controls were taken. Following clinical examination and histopathological confirmation, 5ml blood was collected in a tube containing EDTA and centrifuged. The plasma obtained was stored at -20°C and the PFAAs levels were quantified using HPLC. Statistical analysis was done using student t test, one way ANOVA and post hoc tukeys tests.

**RESULTS:** Out of 19 PFAAs, mean concentration of aspartate, glutamate and arginine were significantly decreased and that of asparagine, glutamine and cysteine were significantly increased in OSCC group. Furthermore, comparing between well (group I) and moderately (group II) differentiated OSCC group, the level of asparagine was significantly decreased and of serine was significantly increased in group II. Significant alterations were also observed, when group I and II were compared to control group in the following: aspartate, glutamate, asparagine, serine,

arginine and cysteine. On comparing stage III and IV OSCC group to control group the levels of aspartate, glutamate, asparagine and cysteine showed significant alterations.

**CONCLUSION:** The alterations in protein metabolism, as shown in PFAA profile may be employed as a supplementary tool for diagnosing OSCC. Meticulous study of amino acid assays may facilitate in understanding the route of metabolic derangement in OSCC patients and recuperating cancer cachexia. Nevertheless, further research is necessary to expound the potential of these profiles in the early detection of malignancy.

**KEY WORDS:** Oral squamous cell carcinoma; plasma free amino acids; high performance liquid chromatography.