

Potential Use of Salivary Biomarkers to Evaluate the Hepatic Status in Cancer Patients under Chemo- and Radiotherapy

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Postsurgical chemotherapy and radiotherapy in cancer patients can have detrimental effects, especially in cases wherein cancer has severely compromised the patients' health. The side effects of the chemotherapy and radiotherapy on the patient can be assessed by the abnormal variations noted in the serum and salivary concentration of several known enzymatic biomarkers. Hepatotoxicity (a common side effect of chemo and radiotherapy) is indicated by an abnormal serum concentration of lactate dehydrogenase (LDH), aspartate aminotransferase (AST), and alanine aminotransferase (ALT). Green et al. examined the serum ALT levels in 2751 childhood cancer survivors (CCS). Anticancer therapeutic medications in CCS (including radiotherapy) were shown to result in a significant hepatic injury, as evidenced by the increased serum ALT concentrations.¹ On the basis of the results, the authors emphasized the role of serum ALT in monitoring the hepatic status in cancer survivors.

Estimation of serum ALT levels, although proved to be reliable, involves periodic invasive sampling, which, on the long run, may not be compatible, especially in a debilitated state as in cancer patients. Use of the saliva (instead of the serum) for ALT estimation in cancer patients could significantly reduce the patient's discomfort. Yamaguchi et al. compared the serum and salivary ALT levels between healthy patients and patients diagnosed with a liver disease. The salivary ALT levels were found to be only one-third of the serum ALT levels. Although salivary concentration of ALT was relatively less than that of serum, a significant difference was noted between the salivary ALT levels of the healthy and that of the liver-disease patients. The salivary ALT activity was higher in liver-disease patients than in the healthy controls. On the basis of their results, they concluded that similar to those of the serum, salivary levels of ALT can also be used to distinguish healthy adults from liver-disease patients.²

Despite promising results, salivary ALT levels have shown to vary in conditions other than a hepatic injury. Diabetes and periodontitis have shown to significantly alter the salivary ALT levels, and thus cancer patients with higher salivary ALT levels must also be assessed for other potential confounders.³⁻⁶ To conclude, although further studies are required to confirm the correlation between salivary ALT levels and the hepatic status, there is sufficient evidence to suggest that estimating ALT levels of the saliva could be a potential noninvasive method to monitor the hepatic status in cancer patients, especially during radio and chemotherapy.

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