Human β-defensins and psoriasin/S100A7 expression in salivary glands: anti-oncogenic molecules for potential therapeutic approaches.

Abstract:
Host defence peptides (HDPs), including human β-defensins (hBDs) and psoriasin/S100A7, exert antimicrobial and immunoregulatory functions of the innate defense system. In addition to these functions, the search for cancer biomarkers has identified HDPs as playing a potential role in both tumor suppression and oncogenesis. Although HDPs are highly expressed in salivary glands, their role as molecules for potential diagnostic and therapeutic approaches has not yet been analyzed. The aim of the present study was to investigate whether expression levels of putative pro- or anti-oncogenic hBDs, including hBD-1, -2, -3, and psoriasin/S100A7, are altered in salivary gland tumor tissue as potential targets for molecular-based therapeutic approaches. We analyzed the expression levels of hBD-1, -2, -3, and psoriasin/S100A7 by quantitative real-time polymerase chain reaction (qrt-PCR) and immunohistochemistry in a case control study by comparing salivary gland tumor samples relative to healthy control specimens from 58 patients. Expression level analysis of hBD-1, -2, -3, and psoriasin/S100A7 by qrt-PCR was normalized to the endogenous 18S rRNA expression levels. The results demonstrate the significant downregulation of hBD-1 (p < 0.001), hBD-2 (p = 0.003), hBD-3 (p = 0.002), and psoriasin/S100A7 (p
mRNA in human salivary gland tumors compared with healthy control specimens. Protein expression levels of hBD-1, -2, -3, and psoriasin/S100A7 in salivary gland tumor tissue were strongly reduced compared with healthy control specimens. The data indicates a putative role of the innate defense system in salivary gland tumor formation. The identification of immunoregulatory molecules as diagnostic biomarkers or therapeutic targets could provide new approaches for molecular-based diagnostic and therapeutic support to treat salivary gland tumors as well as other malignancies. We suggest that HDPs should be taken into consideration for use in molecular-based therapeutic approaches.