



Title	Molecular expression of adiponectin in human saliva
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論文内容の要旨

Synopsis of Thesis

氏 名 Name	Lin, Hsiao Yun
論文題名 Title	Molecular expression of adiponectin in human saliva (ヒト唾液中に認められた高分子アディポネクチンの同定)
論文内容の要旨 〔目 的(Purpose)〕 Adiponectin (APN) is an adipocyte-specific secretory protein including a collagen-like domain. In this domain, three APN monomers form one stable trimer, and the trimers further multimerize to form bouquet forms. Some evidences indicated that APN can be produced by cells other than adipocytes, such as epithelial cells in salivary gland, which might be implicated in the regulation of local inflammatory responses, such as periodontal disease. It would be useful for many clinical studies if APN levels are measureable in the saliva, because it is easy to repeatedly collect saliva. However, the characteristics and the precise forms of APN in human saliva are not well understood. In the present study, we demonstrated the presence of multimeric isoforms of APN using non-reducing Western blotting and identified for the first time a super high-molecular-weight band of APN in saliva, which is clearly different from that in serum. 〔方法ならびに成績(Methods/Results)〕 Method: Saliva samples from 52 healthy individuals (37 males and 15 females) were used in the study. The samples were investigated by separated SDS-PAGE under reducing and non-reducing western blotting, and were also measured in a commercially available ELISA assay (Perkin Elmer®). Occult blood in saliva was detected using a clinical investigation kit (Hemoglobin detection kit for fecal occult blood). Results: Age and BMI were significantly higher and body fat percentage was lower in males than in females. No significant differences in saliva volume and APN levels were observed between the two groups. Western blotting under non-reducing conditions revealed that salivary APN consisted predominantly of a super HMW (SHMW) form of APN. In western blotting, no significant differences were observed in SHMW APN levels in saliva samples with or without occult blood, but non-SHMW APN levels were elevated in the samples with occult blood. Salivary adiponectin levels are 1000 times lower as compared with serum adiponectin. In the saliva samples without occult blood, APN levels were significantly elevated in females than in males (6.9 ± 4.9 vs. 2.9 ± 1.2 ng/mL, $p < 0.05$), which is compatible with the results of previous reports for serum samples. We detected SHMW APN in saliva for the first time. SHMW APN is specific to saliva samples and was not affected by occult blood. 〔総 括(Conclusion)〕 We first demonstrated that super HMW APN is detected in saliva through western blotting analysis. Furthermore, our study shows that salivary APN is affected by occult blood; therefore, it is insufficient for use commercially available ELISA kits as determining salivary adiponectin. Technical approaches for determining salivary HMW APN await further studies and improvements. In summary, salivary SHMW APN is suggesting a possible promising oral biomarker.	

論文審査の結果の要旨及び担当者

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論文審査の結果の要旨

アディポネクチンはインスリン感受性、免疫調節に対する重要な調整因子である。ヒト血中に比較的高濃度存在するが、唾液中にも存在し、その値が血中アディポネクチンレベルと相関することが報告されている。しかしながら、唾液中アディポネクチン測定法は安定性や再現性に乏しいのが問題である。本研究では健常成人における唾液中アディポネクチンの多量体分布について、非変性条件下、Western blot法により評価検討を行った。その結果、唾液中アディポネクチンの量体分布は血液中とは異なり、主に多量体または血液中にこれまで報告されていない超多量体構造が存在する事を始めて見出した。唾液では、潜血反応陽性と判明した検体において、中、低分子量アディポネクチンの発現が増加し、ELISA assayの測定結果に影響を与える。しかしながら、唾液中高分子量アディポネクチンレベルは潜血の影響を認めない。また、歯周病菌陽性の唾液中高分子量アディポネクチンレベルが低下することが示唆された。歯周病などの口腔内炎症の有無は糖尿病などの生活習慣病との関連性が知られており、唾液中の高分子量アディポネクチンは早期の口腔内疾患炎症マーカーとして有力なバイオマーカーになることが示唆された。

したがって、本研究は今後の臨床に還元できるものとして、学位の授与に値すると考えられる。