1. No.

   2021G020

2. Title

   Research for bioactive peptides contained in tabacco

3. Period

   2021-2023

4. Summary

The discovery of unknown biologically active peptides and hormones will lead to the elucidation of new biological control mechanisms and pathophysiology of diseases. We have searched for a novel peptide in peptide extract from tobacco leaves (Nicotiana tabacum). We have prepared weak basic peptide fraction (SPII) and strong basic peptide fraction (SPIII) from of tabaco leaves. We examined three kinds of assays to search for peptides. SPII and SPIII showed clear angiotensin converting enzyme (ACE) inhibitory activity. After fractionation of both fractions by RP-HPLC, ACE inhibitory activity was found in all fractions, suggesting the low specificity of tabaco peptides. We examined peptides that act on the adrenomedulin (AM) receptor, the stable expression system of AM receptor (CLR/RAMP2). But, we could not show any activity in peptide fraction that affects AM receptor. We found the inhibitory activity of AM degradation in SPIII fraction. This activity was abolished after trypsin treatment, indicating that the substances exhibiting the activity are peptides. Using this assay, we have purified two peptide peaks which shows the activity. The purified peptide was analysed with Q Exactive to reveal the structure of the peptide candidates SPC1~10 (Stabilizing Peptide Candidate 1~10). We synthesised these peptides and examined their activity but no activity was found. In conclusion we found the interesting activity which inhibit AM degradation in serum. But the peptides of interest could not have been found.