**Quantification of formaldehyde in mixture of gases by the bacteria on MP2 culture medium by GC-MSD**

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Methanol and formaldehyde are mainly manufactured from natural gas, but biomass can also be gasified to methanol and formaldehyde. Methanol can be produced by means of the catalytic reaction of carbon dioxide. A mixture of gases from the bacteria on MP2 culture medium was analyzed to measure the concenration of formaldehydes and methanol and to optimize a method for the analysis of formaldehydes and methanol.

For formaldehyde analysis, a qualitative and quantitative method using 2, 4-dinitrophenylhydrazine (DNPH) derivatization and L.L.E. followed by analysis with gas chromatography/ mass spectrometry (GC-MS) was optimized. The experimental method used for the samples was validated in terms of its precision and recovery. The recovery was 98.87 % and the precision was 2.77 %, and formaldehyde had correlation coefficients equal to 0.9992, respectively. Thus, the method optimized to measure the concentration in a mixture of gases from the bacteria on MP2 culture medium was appropriate. For methanol analysis, a qualitative method was directly injected to GC-MS. To confirm the production of formaldehyde and methanol, 13C-labelled carbon dioxide was used to produce 13C-labelled formaldehyde and 13C-labelled methanol.

As results, the concentration of formaldehyde in samples was 1.3 ppm. However, 13C-labelled formaldehyde was not detected. Otherwise, 13C-labelled methanol was successfully detected.

Key words : formaldehyde, methanol, GC-MSD

Reference

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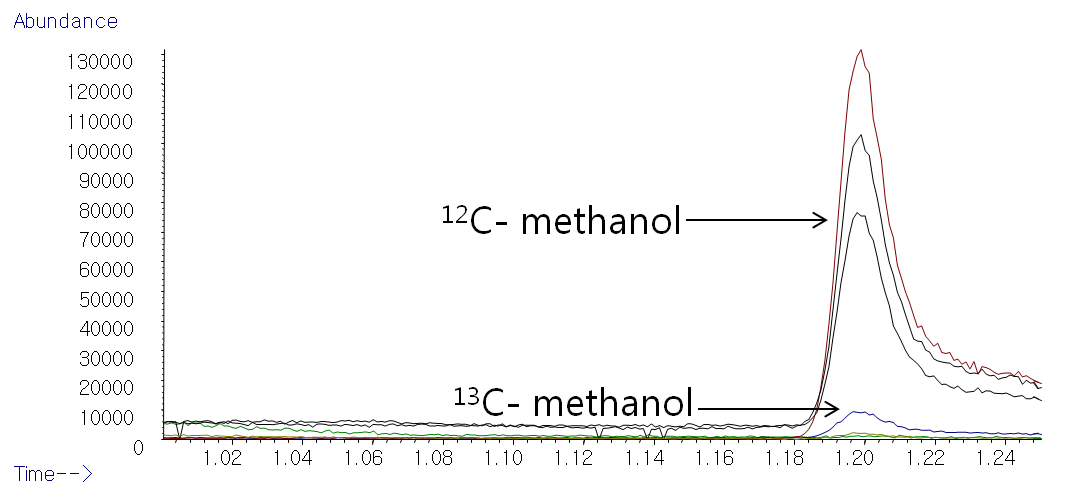


Figure 1. GC chromatogram of 13C-methanol and 12C-methanol