

Comparing glass and deactivated stainless steel sample cups - Part 2 Analysis of fatty acids in *Salmonella* by reactive Py-GC/MS

[Background] A previous note (PYA1-083E), compares the effect of the sample cup surface (glass vs. deactivated stainless steel) on the analysis of Decabromodiphenyl ether (DeBDE) in polystyrene using thermal desorption (TD) -GC/MS. No differences in DeBDE response are observed. This note compares the effect of the two sample cup surfaces on the methylation and distribution of the fatty acids in *Salmonella* formed using reactive pyrolysis (RxPy)-GC/MS.

[Experimental] A GC/MS system with a Multi-Shot Pyrolyzer (EGA/PY-3030D) directly interfaced to the split injection port of the GC was used. 30 µg of *Salmonella* typhimurium LT2, and 6 µL of tetramethylammonium hydroxide (TMAH) in 25 wt% methanol were placed in a sample cup. The cup was dropped into the pyrolyzer furnace which was heated at 400°C. The fatty acid derivatives were split, the smaller portion flowing to the separation column.

[Results] The chromatograms obtained by reactive pyrolysis of *Salmonella* using glass (Eco-cup G) and deactivated stainless steel (Eco-cup) cups are compared in Fig. 1. The chromatographic profiles for methyl esters of fatty acids are very similar. Fatty acid compositions obtained from the peak areas are shown in Table 1. The fatty acid compositions obtained using both types of sample cups are also very similar. These results show that both cups (Eco-cup G and Eco-cup) yield comparable results and can be used when performing quantitative, reactive pyrolysis (RxPY)- GC/MS analysis.

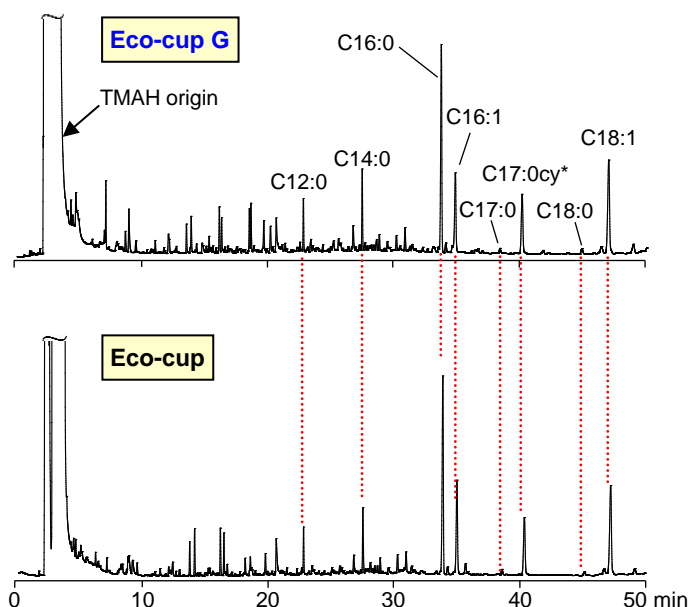


Table 1 Fatty acid compositions obtained using glass and stainless steel sample cups (mol %)

Fatty acids	Eco-cup G	Eco-cup
C12:0	6.4	5.4
C14:0	9.1	8.4
C16:0	32.4	33.1
C16:1	14.3	17.6
C17:0	1.0	1.1
C17:0cy	13.2	12.9
C18:0	1.2	0.8
C18:1	22.4	20.7
Total	100.0	100.0

Fig. 1 Chromatograms obtained by reactive pyrolysis of *Salmonella* in the presence of TMAH

CM:N M: number of carbons, N: number of double bonds * cy: molecular structure contains cyclopropane ring

Furnace temp.: 400°C
 Colum: UA-CW (L=30 m, i.d.=0.25 mm, d.f.=0.25 µm)
 GC oven temp.: 50 - 180°C (5 °C/min, 20 min) - 220°C (5 °C/min)

Ref. Y. Ishida et al., *J. Anal. Appl. Pyrolysis*, 77 (2006) 116-120

Keywords : Glass sample cup, *Salmonella* typhimurium, Reactive pyrolysis GC/MS, Fatty acid composition analysis

Products used : Multi-functional pyrolyzer, UA-CW, Vent-free GC/MS adapter, Eco-cup G

Applications : General polymer analysis, Thermal desorption analysis

Related technical notes : PYA2-022E, PYA1-075E, PYA1-076E, PYA1-083E

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