

Thesis Title	Gas Chromatographic Identification of Lipid Without a Reference : Effect of Column Lengths
Thesis Credits	12 credits
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Degree of Study	Master of Science
Department	Biochemical Technology
Academic Year	1998

### Abstract

Krisnangura *et al* (1997) proposed an equation to predict carbon number of fatty acid methyl esters (FAMES) for gas chromatography as follows:

$$\ln k' = \frac{\Delta S^0}{R} + \ln \beta + \frac{\delta S n}{R} - \frac{\Delta H^0}{RT} - \frac{\delta H n}{RT}$$

where  $k'$  is retention factor;  $k' = \frac{(t_r - t_0)}{t_0}$ ,  $t_r$  is the retention time of the FAMES,  $t_0$  is the retention time of an unretained compound,  $n$  is carbon number of the saturated compound,  $T$  is the absolute temperature and  $\beta$  is the phase ratio of the column. This equation can be used for analysis of carbon number of FAMES, n-paraffin and others implemented with Kovat retention index. However, thermodynamic constants in the equation may change due to substance characteristics and stationary phase but effect of column lengths has not reported. Therefore, the thesis aims to study the effect of thermodynamic constants to predict carbon number of FAMES for gas chromatography. OMEGAWAX, diameter 0.25 mm and a given length of column (30, 27, 24 and 21 m.), was used for the study. Column lengths were varied with isothermal and temperature program condition. It was found that comparable results from the reference and calculated carbon number of fatty acid was in the range of  $\pm 3$  %, suggesting that the thermodynamic values were less effect from the investigated column lengths.

**Keywords :** Carbon Number/ Fatty Acid Methyl Esters/ Gas Chromatography/ Retention time