

Thesis Title	Variation of capillary column efficiency with fatty acid methyl ester and fatty alcohols homologs.
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Abstract

Gas chromatography is the science of separation and column efficiency is determined by the following equation:

$$N = 16t_r^2/w^2$$

or $H = (L.w^2)/(16.t_r^2)$

where N is the number of theoretical plate, H is the height equivalent to a theoretical plate, t_r is the retention time of the test substance, w is the idealized width of the peak at the base line and L is the column length. The higher N values is the better column efficiency, but the higher H values indicates lower column efficiency. Hence they are inversely related.

It was found that when the oven temperature increased, the efficiency of column increased as well. The number of theoretical plate and H_{min} are different for fatty acid methyl ester and fatty alcohols homologs. Also, flow rate optimum are different. Generally larger molecule of the same series, tends to have lower flow optimum, and lower N. H_{min} and flow optimum can be calculated conveniently by a linear equation. When results were compared among fatty acid methyl ester and fatty alcohols and hydrocarbon homologs it can be speculated that other homologous series behave very similar in the chromatographic column.

Keywords: Carbon number / Gas chromatography / Height equivalent to a theoretical plate /
Fatty acid methyl ester / Fatty alcohols / Plate number / Retention time