

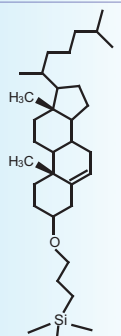
Evaluation of Novel Cholesterol Bonded Silica Packing Material for Liquid Chromatography

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Cholesteryl group

Abstract :

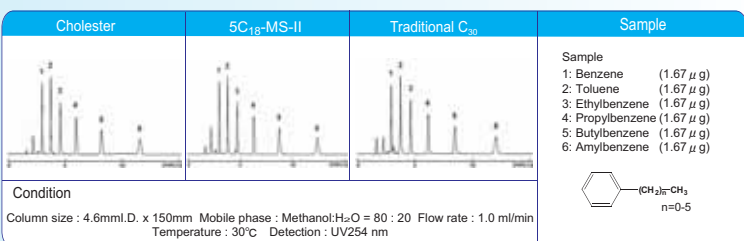
Octadecyl group bonded silica gel (C₁₈, ODS) has been most commonly used to separate various compounds since HPLC technique was developed. However, there are many hard-to-analyze compounds with ODS even after optimizing the analytical conditions. Altering the stationary phase and selecting efficient columns for these hard-to-analyze compounds entail laborious work. We have developed new packing material, COSMOSIL Cholesterol, which can be used without changing the analytical conditions used with ODS columns.

The retention properties of this new packing material were compared to ODS and C₃₀ packing materials. The new stationary phase shows the same hydrophobicity as ODS, therefore analysis is possible under the same conditions as for ODS.

To evaluate the usefulness of the new packing material, the separation factor, pattern, and the stereo selectivity arising from its rigid-structure is compared with ODS and C₃₀.

Basic Nature

<Comparison of Hydrophobicity>

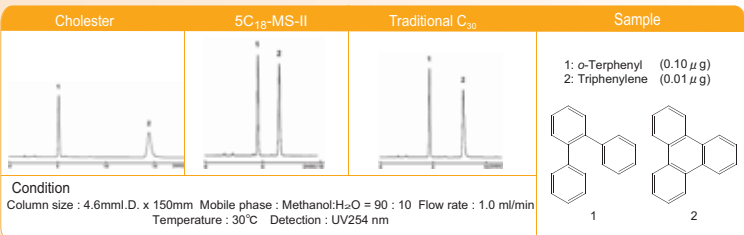


Separation Characteristics

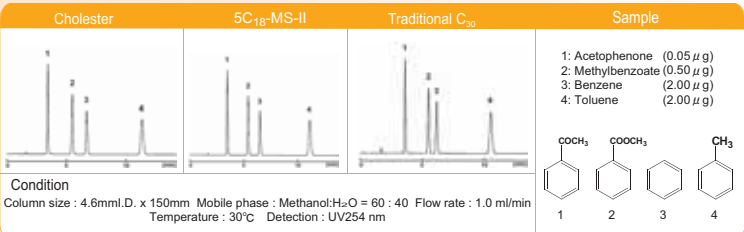
The separation characteristics of COSMOSIL Cholesterol were compared with Alkyl group bonded silica packing materials (C₁₈, C₃₀). COSMOSIL Cholesterol shows highly molecular-shape selectivity, and well retains halide compounds.

<Comparison of Stereo Selectivity>

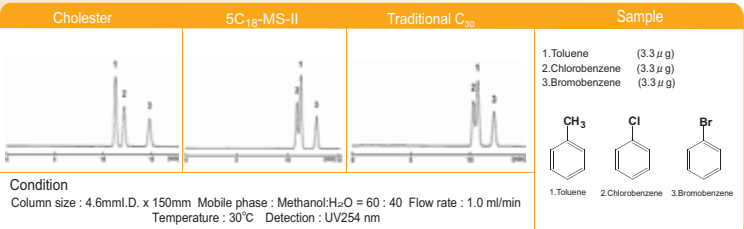
Due to the unique rigid structure, COSMOSIL Cholesterol is more retentive for the planar compound (Triphenylene) than the stereoscopic compound (o-Terphenyl). COSMOSIL Cholesterol has stronger stereo selectivity than the Alkyl group bonded silica packing materials (C₁₈, C₃₀).



<Comparison of Selectivity for Polar Functional Group>

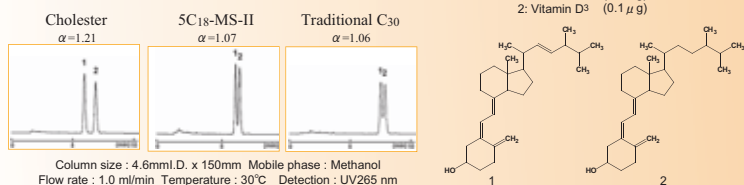


<Comparison of Selectivity for Aryl Halide>

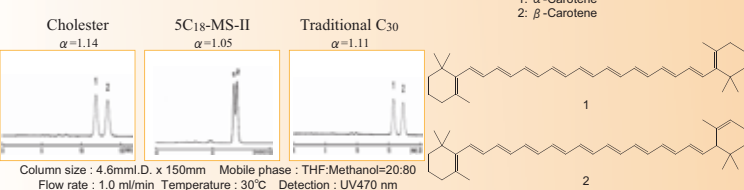


Analysis

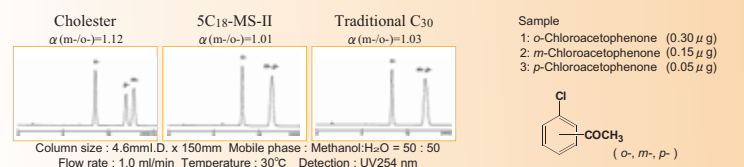
<Structural analog like Vitamin D>



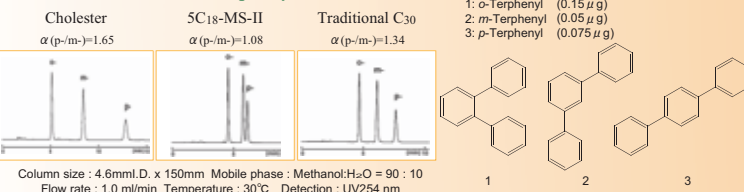
<Structural isomer like Carotene>



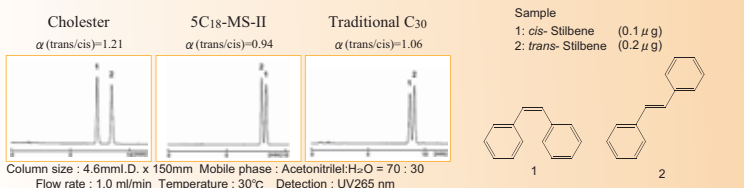
<Positional isomer like Chloroacetophenone>



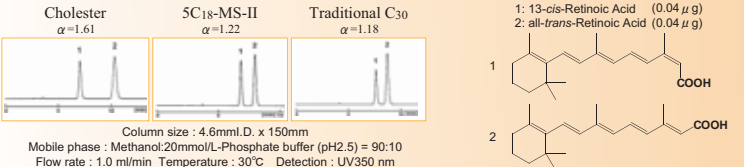
<Positional isomer like Terphenyl>



<Geometrical isomer like Stilbene>



<Geometrical isomer like Vitamin A acid>



Conclusion :

We have developed efficient and unique stationary phases for more than 20 years. Our newly improved packing material provides equivalent hydrophobicity like that of traditional Alkyl group bonded types (C₁₈, C₃₀). It offers strong stereo selectivity for hydrophobic compounds to yield unique and reproducible separation patterns following the same analytical conditions used with traditional Alkyl group bonded types.

Improved packing material, named COSMOSIL Cholesterol, shows promising separation characteristics in structural analog and isomer. So it is expected as the best alternative column to traditional ODS columns.

