

Analysis of Methyl Vanillin and Ethyl Vanillin by HPLC

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Introduction

Vanilla contains methyl vanillin, which is normally not used in foods and drinks due to non-availability and its high price. Instead of methyl vanillin, a chemical substitute, ethyl vanillin, is used by many manufacturers. But it does not have the rich taste or robust flavor of natural vanillin. On the international scene, synthetic vanillin contributes 95 percent of the vanilla flavor. However, the health-conscious modern world prefers natural vanillin to the synthetic one. This field application report provides an HPLC method for the separation of the natural methyl vanillin and the synthetically-derived ethyl vanillin.

Experimental

The analysis was carried out using a PerkinElmer® Series 200 HPLC System, including binary pump, autosampler and UV-Vis detector. The column used was the Brownlee™ Validated C18 column, 150 X 4.6 mm, 5 µm. The mobile phase conditions were 40:60 methanol and 0.2% v/v conc. H₃PO₄, with a flow rate of 1.0 mL/min, run at ambient temperature. The UV/Vis detector was set to 254 nm and the injection volume was 10 µL. The 50:50 mixture of methyl vanillin and ethyl vanillin was diluted in methanol.

Results

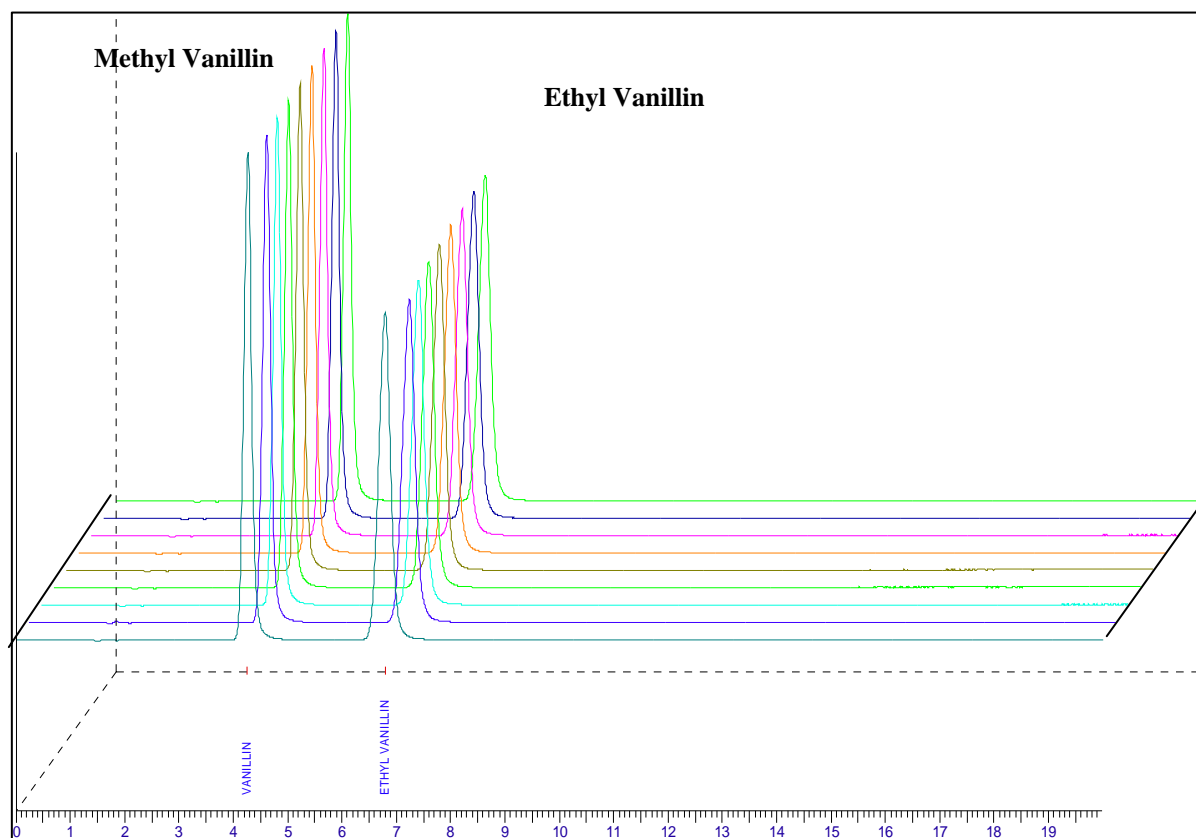


Figure 1. Excellent reproducibility of peak area and retention times, as well as very good peak separation of methyl vanillin and ethyl vanillin.

Conclusion

The method described in this field application report provides a simple approach for analysis and separation of methyl vanillin (contained in natural vanilla) and ethyl vanillin by HPLC. This method can be used for both qualitative as well as quantitative analysis.

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The data presented in this Field Application Report are not guaranteed. Actual performance and results are dependent upon the exact methodology used and laboratory conditions. This data should only be used to demonstrate the applicability of an instrument for a particular analysis and is not intended to serve as a guarantee of performance.