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Feasibility of correlating separation of ternary mixtures of neutral analytes via thin layer chromatography with supercritical fluid chromatography in support of green flash separations

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Method development for flash liquid chromatography as normal phase and reversed phase traditionally employs preliminary thin layer chromatography (TLC) with conventional solvents on bare silica. Extension to green flash chromatography via correlation of TLC migration results with conventional polar/non-polar liquid mixtures and packed column supercritical fluid chromatography (SFC) retention times via gradient elution on bare silica with a suite of carbon dioxide mobile phase modifiers is reported. Feasibility of TLC/SFC correlation is individually described for eight ternary mixtures of a total of 24 neutral analytes. The experimental criteria for TLC/SFC correlation was assumed to be as follows: SFC/UV/MS retention (t_R) increases among each of the three resolved mixture components; while, TLC migration (R_f) decreases among the same resolved mixture components. Good correlations of all 24 analytes were observed via SFC on bare silica with methanol as the CO₂ modifier and TLC on bare silica with a methanol/dichloromethane (95/5) mixture.

Biography

Tony Q Yan is currently working for Pfizer, Inc. (Groton, CT, USA) in the field of impurity isolation for structure elucidation in the Department of Pharmaceutical Science. He has been working in pharmaceutical research and development in the area of chiral and achiral purifications, and impurity isolation for over 20 years since he graduated from the Department of Chemistry in University of Missouri in Rolla with PhD degree in 1995.

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