

**CAN SODIUM DODECYL SULFATE RETAIN ALL HYDROPHILIC ISRP ANALYTES?**

**Discussion:** A paper of great importance to ISRP technology has appeared:

Journal of Chromatography, 420 (1987) 297-311

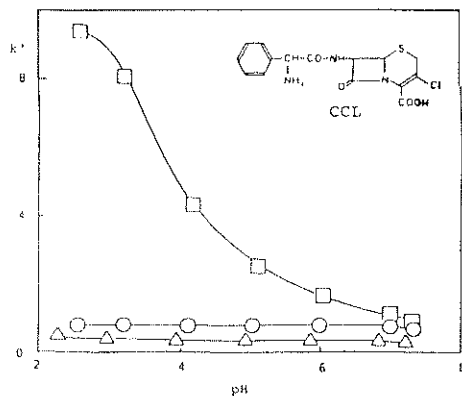
**RETENTION PROPERTIES OF INTERNAL-SURFACE REVERSED-PHASE SILICA PACKING AND RECOVERY OF DRUGS FROM HUMAN PLASMA.**

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In the next Application Note, we shall discuss another facet of this seminal paper, but in this Note, only the separation of cefaclor (CCL) from the proteins of human plasma.

With the permissions of the authors and of the Journal of Chromatography, we show here Figures 1 and 2 from the paper of interest. These figures show that 20 mM sodium dodecyl sulfate (SDS) increases the capacity factor of CFC by large factors that increase with decreasing pH. For the excellent separation shown in Figure 2, the pH needed to be decreased only to 4.38. Apparently, the SDS also kept the column completely free of retained protein, despite both the low pH and the many samples injected.

We think that the SDS-caused increase of ISRP capacity factor found for CFC will be found for hydrophilic drugs generally, markedly widening the applicability of ISRP columns. For that widening alone, the Nakagawa paper marks a significant advance in ISRP technology. (For another important facet of that paper, see the following Application Note, No. 27).



**Figure 1**

Fig 1. The ISRP capacity factor of cefaclor (CCL) is unusably low for buffered mobile phase either with (triangle-dotted line) or without (circle-dotted line) 20 mM sodium heptanesulfonate. However, 20 mM SDS (square-dotted line) increases that capacity factor by almost an order of magnitude with decreasing pH--although the pH need actually be decreased only to 4.38 for the good separation shown in Figure 2. ISRP column: 15 cm; flow rate, 1.0 ml/min; detection, 220 nm.



(A)



(B)

**Figure 2**

Fig 2. ISRP-SDS chromatograms of human plasma (A) and of (B) human

CCL. The mobile phase--0.1 M sodium phosphate buffer (pH 4.38)--contains plasma containing 20 micrograms/ml of 20 mM SDS; flow rate, 0.8 ml/min. The ISRP column is 15 cm long. Detection: 254 nm; sample size: 10 microliters.