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Continuous Separation of Glucosides in Dual-Flow Extraction System*

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A new separation system in dual-flow countercurrent extraction has been established. As a result, a two-component mixture could be separated with the improved apparatus, liquid particle extractor, whose working principle is the same as that in liquid particle chromatography (LPC). Liquid particle chromatography has been used as a means to determine the distribution constants of components in a sample, which were necessary for setting the operating condition of the extractor. The optimum condition for the best separation of two compounds (distribution constant of D_1 and D_2) was deduced theoretically. Thus, the flow rate of the aqueous phase (H) could be determined by a calculation using the flow rates of the sample feed (A , fed as an organic solution) and the organic phase (S) by the relation: $H = (S + A/2) \sqrt{D_1 \times D_2}$. With the extractor, a continuous and complete separation of phenyl β -D-glucopyranoside ($D = 1.17$) and esculin ($D = 1.58$) in a 100 mg-scale (100 mg each in 20 ml of water saturated 1-butanol) could be executed in 14 h. A precise separation of a mixture with a separation factor (D_1/D_2) of 1.23 was also accomplished.

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