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P344. The use of the Collander equation as solute partition-predictive model

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Efficient and economical downstream processing of biological products has been one of the main challenges of biotechnology industry. Aqueous two-phase systems (ATPSs) are long known to be a promising separation technique and a valuable alternative to the conventional approaches.
Since their first application, ATPSs have been used for a wide range of applications, mainly in the separation and recovery of bioproducts. Their clear advantageous features and their potential as extraction technique has been demonstrated through the years.
Regardless of their potential, only recently the use of ATPSs by the industry sector has received relevant interest. Yet, for their successful use it is important to study systems' properties at molecular level and understand the mechanisms of solute partitioning.
The Collander equation was proposed to describe solute partition in water-organic solvent systems, but this model has been effectively extended to correlate partition of unrelated compounds in two (or more) different ATPSs, supporting the idea that this model can be used to predict partitioning in ATPSs.
So far, the use of the Collander equation to describe and predict the partition of solutes present in complex mixtures, in ATPSs, was never reported. Thus, we attempted to apply this empirical model to a real case scenario of ATPS partitioning, aiming the recovery of three natural pigments obtained by submerged fermentation of a Penicillium strain.