

## **Application of experimental designs and response surface methods in screening and optimization of reverse micellar extraction**

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### **ABSTRACT**

Reverse micellar extraction (RME) has emerged as a versatile and efficient tool for downstream processing (DSP) of various biomolecules, including structural proteins and enzymes, due to the substantial advantages over conventional DSP methods. However, the RME system is a complex dependency of several parameters that influences the overall selectivity and performance of the RME system, hence this justifies the need for optimization to obtain higher possible extraction results. For the last two decades, many experimental design strategies for screening and optimization of RME have been described in literature. The objective of this article is to review the use of different experimental designs and response surface methodologies that are currently used to screen and optimize the RME system for various types of biomolecules. Overall, this review provides the rationale for the selection of appropriate screening or optimization techniques for the parameters associated with both forward and backward extraction during the RME of biomolecules.

### **KEYWORDS**

Reverse micellar extraction; Design of experiments; Full factorial design; Central composite design; Box–Behnken design; Response surface methodology; Plackett–Burman design; Taguchi method

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