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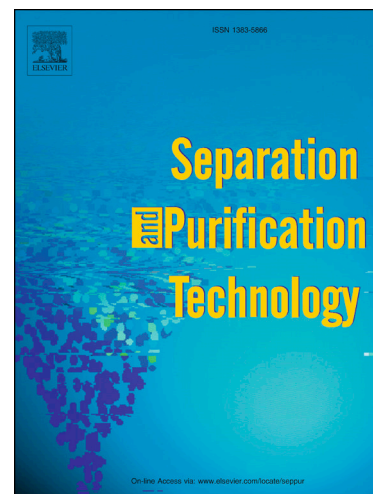
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**Identification and role of *Opuntia ficus indica* constituents in
the flocculation mechanism of colloidal solutions**

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Abstract

Opuntia ficus indica has been identified for its bioflocculant properties in water treatment; however, its underlying mechanism and active compounds have not been clearly identified. Flocculent molecules of cactus solid material (CSM) under alkaline conditions were extracted at pH 10 and then precipitated under neutral conditions (pH 7). The precipitate was fractionated by ultrafiltration systems and analyzed using inverted phase chromatography and enzymatic treatments. This approach revealed that quercetin and starch constitute the active agents found in the fractionated parts at $\leq 3,000$ and $\geq 10,000$ Da, respectively. The use of quercetin or (potato) starch alone at 18 mg/L yielded $72\% \pm 2\%$ and $54\% \pm 3\%$ of turbidity removal, respectively. With a combination of both these components, a higher flocculation activity ($84\% \pm 2\%$) could be obtained. From these experimental results, a flocculation model

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