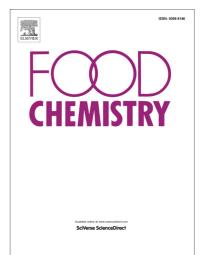
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Short communication

Polymer incompatibility as a potential tool for polyphenol recovery from olive mill wastewater

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ACCEPTED MANUSCRIPT

1	Polymer incompatibility as a potential tool for polyphenol recovery from
2	olive mill wastewater
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12	
13	Abstract
14	Experiments were designed and preformed in consideration of polymer type (proteins, i.e. caseinate
15	and ovalbumin, and polysaccharides, i.e. alginate and methylcellulose), charge character and
16	polysaccharide concentrations, intended to understand how the polymer properties determine both
17	phase separation and polyphenol partitioning from olive mill wastewater (OMW). The highest yield
18	of polyphenols (Y_{BP} = 92.9 %) was achieved in an aqueous two-phase system (ATPS) using an
19	ovalbumin-methylcellulose system (OMCS) in comparison to ATPS with caseinate-alginate system
20	(CAS; $Y_{BP} = 85.8 \%$) or caseinate methylcellulose system (CMCS; $Y_{BP} = 74 \%$). The performance of
21	CMCS for the ATPS partitioning of polyphenols in OMW was found to depend on the addition of salt
22	(sodium chloride). The use of centrifugation as assistive technology appears to be necessary for the
23	polyphenol partitioning in ATPS using OMCS. In contrast to these polymer systems, CAS caused a
24	rapid ATPS without resorting to centrifugation and salt, mainly because of strong electrostatic
25	repulsion between alginate and caseinate. In this regard, CAS in phase-separated OMW obtained a 1

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