

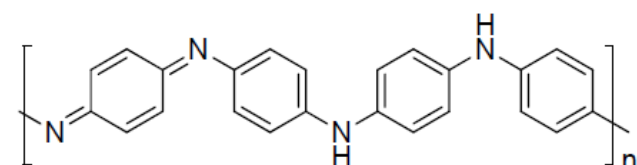
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AIM

Study the trapping capacity of four polyaniline polymers towards phenolic compounds in wine-like model solutions.

METHODS



PANI-EB and different PANI-PVPP composites (PANI 50, 100, 150)

doses of 0, 2, 4 and 8 g/L

50 mg/L phenolic compounds

Model wine solution

-Ethanol: 12% (v/v)
-Tartaric acid: 4 g/L
-pH = 3.6

- Gallic acid
- Caffeic acid
- (+)-catechin
- (-)-epicatechin
- Rutin

Stirred using a platform shaker at 20 °C for 2, 8, 16 and 24 h



Detection and quantification of compounds by HPLC-DAD at 280, 320 and 360 nm.

RESULTS

Regardless of the polymer used, the compounds having more affinity for PANI were galic and caffeic acid, whereas rutin and (+)-catechin were the least removed

The concentration of the five phenols decreased as the contact time increased. Like so, the decrease in the concentration of all phenols was greater when more polymer was added.

CONCLUSIONS

PANI Polymers could be an interesting alternative for analytical or experimental applications in which phenolic compounds need to be removed

Figure 1. Example of phenolic removal after 8h of contact time with PANI-100

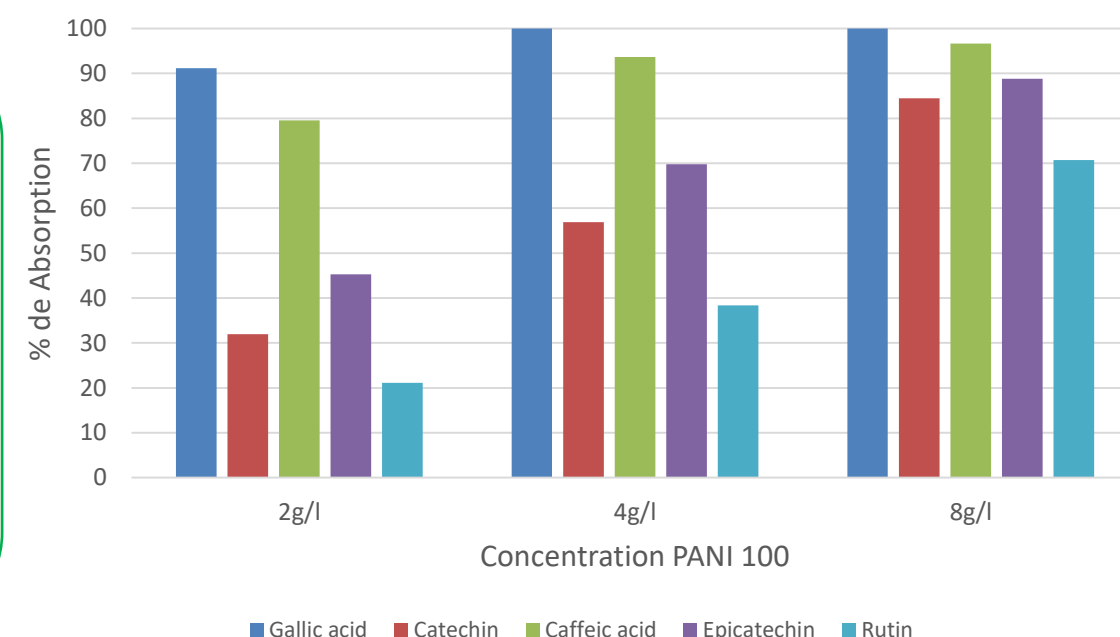


Table 1. Example of gallic and caffeic acid removal after PANI-50 treatment

Phenols	Time	PANI-50 Concentration			
		0 g/L	2 g/L	4 g/L	8 g/L
Gallic Acid (mg/L)	0h	50,13 ± 0,14 a A	50,13 ± 0,1 a A	50,13 ± 0,1 a A	50,13 ± 0,1 a A
	2h	50,07 ± 0,62 a A	19,64 ± 0,74 b B	7,35 ± 0,64 c B	n.d
	8h	49,88 ± 0,73 a A	11,22 ± 0,30 b C	1,84 ± 0,42 c C	n.d
	16h	50,22 ± 0,40 a A	8,16 ± 0,58 b D	n.d	n.d
	24h	49,82 ± 0,54 a A	4,06 ± 0,38 b E	n.d	n.d
Cafeic Acid (mg/L)	0h	50,12 ± 0,10 a A	50,12 ± 0,10 a A	50,12 ± 0,10 a A	50,12 ± 0,10 a A
	2h	50,25 ± 0,40 a A	28,48 ± 0,61 b B	17,90 ± 0,35 c B	8,83 ± 1,18 d B
	8h	49,73 ± 0,61 a A	20,99 ± 0,30 b C	12,58 ± 0,32 c C	9,33 ± 1,02 d B
	16h	50,22 ± 0,28 a A	18,64 ± 0,63 b D	4,52 ± 0,64 c D	1,54 ± 0,43 d C
	24h	49,79 ± 0,34 a A	13,11 ± 0,18 b E	4,25 ± 0,43 c D	0,88 ± 0,07 d C

Results are expressed as mean ± standard deviation. Different lowercase letters in a row indicate a statistical difference (p < 0.05) between concentration levels. Different uppercase letters indicate a statistical difference (p < 0.05) between contact times.

ACKNOWLEDGMENTS: ANID Chile, Fondecyt grant #1190301