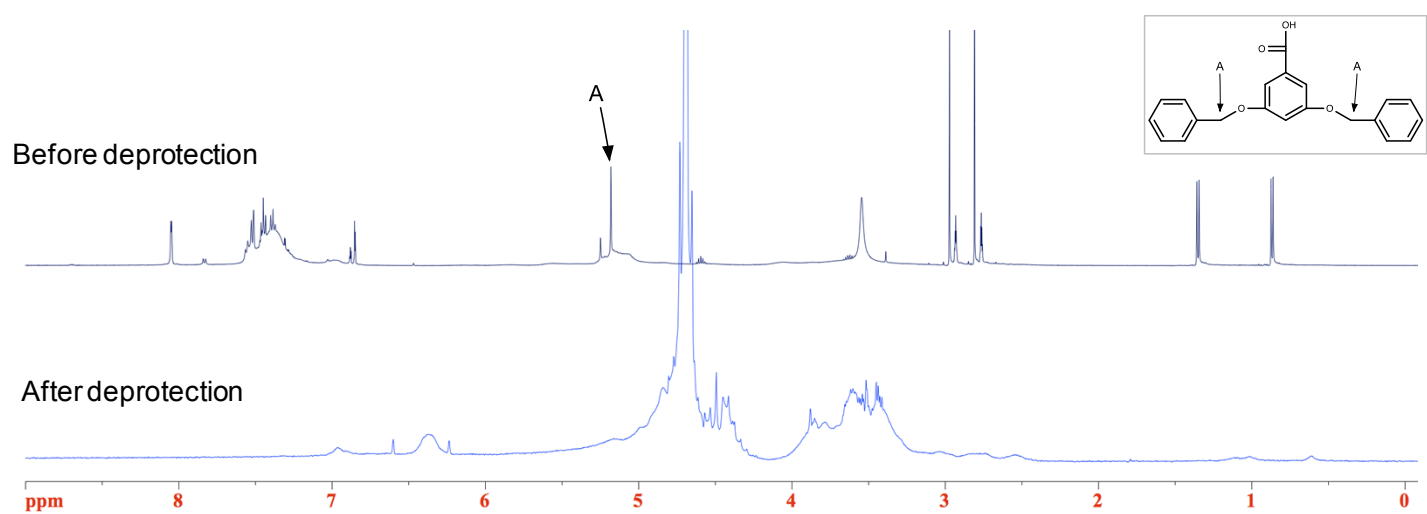
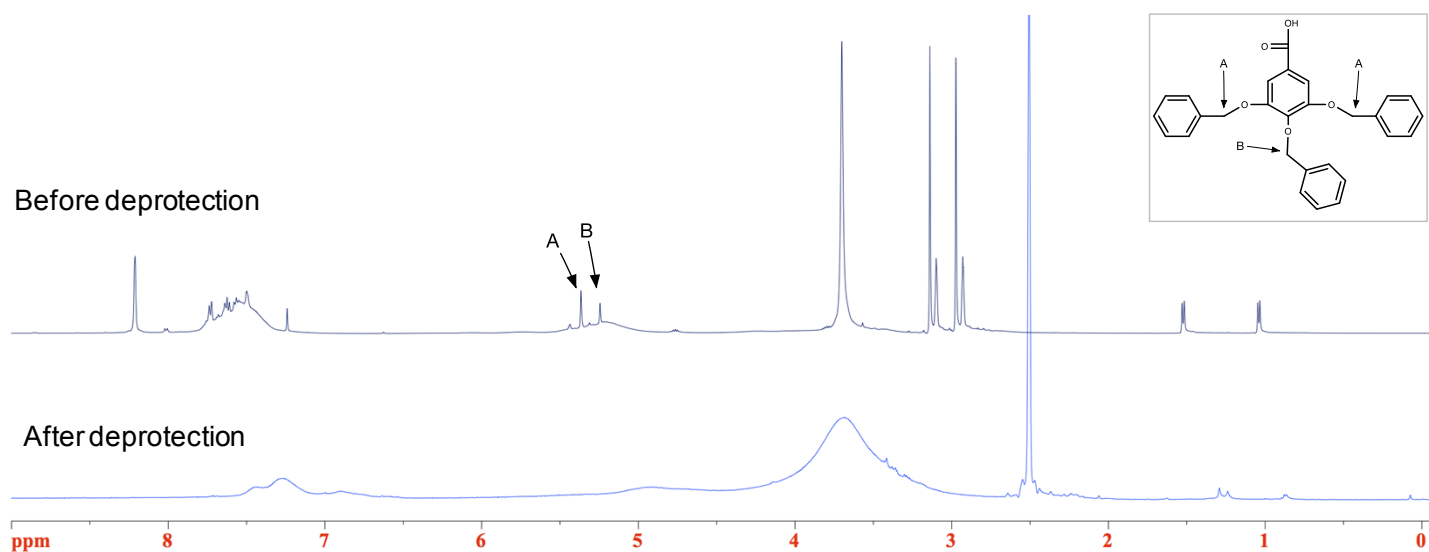


Supplementary Figure 1. ¹H NMR spectra of D6K-polycatechol before deprotection in DMF-d₇ (top) and after deprotection in D₂O (bottom) show a loss of peaks (A and B) associated with the benzyl protecting groups indicating successful deprotection. Broad peaks associated with aromatic protons on a phenol are also seen after deprotection, providing evidence that the remaining structures are preserved.



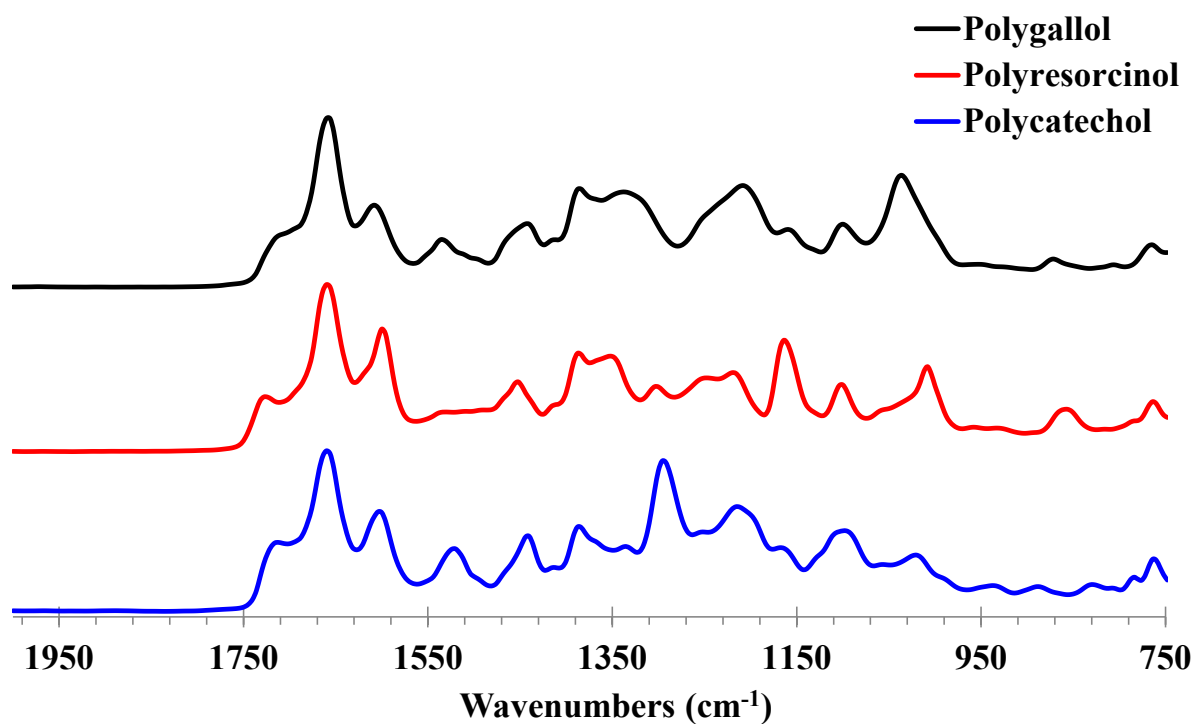
Supplementary Figure 2. ¹H NMR spectra of D6K-polyresorcinol before deprotection in DMF-d₇ (top) and after deprotection in D₂O (bottom) show a loss of a peak (A) associated with the benzyl protecting groups indicating successful deprotection. Peaks associated with aromatic protons on a phenol are also seen after deprotection, providing evidence that the remaining structures are preserved.



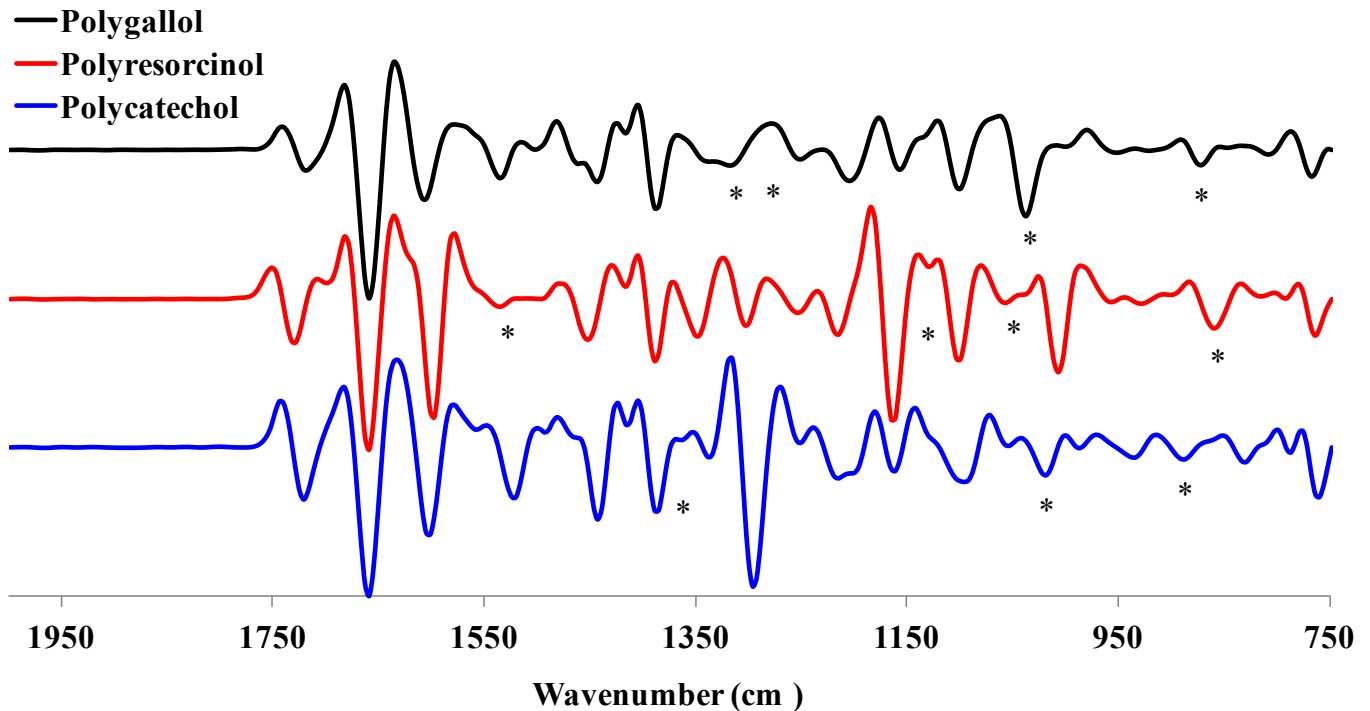
Supplementary Figure 3. ¹H NMR spectra of D6K-polygallol before deprotection in DMF-d₇ (top) and after deprotection in DMSO-d₆ (bottom) show a loss of a peak (A) associated with the benzyl protecting groups indicating successful deprotection. Peaks associated with aromatic protons on a phenol are also seen after deprotection, providing evidence that the remaining structures are preserved.

Supplemental Table 1. FT-IR peaks identified for each class of pseudotannin within the fingerprint region.

Vibrational Group	Polycatechol	Polyresorcinol	Polygallol
C=O Ester	1693, 1658, 1600	1697, 1658, 1596	1700, 1659, 1604
Aromatic C=C-C Stretching	1550, 1524, 1492, 1443, 1416	1558, 1535, 1493, 1488, 1450, 1416	1562, 1535, 1500, 1462, 1443, 1416
C-O Stretching	1388, 1365, 1338, 1296, 1250, 1204	1388, 1350, 1304, 1254, 1215	1389, 1353, 1342, 1319, 1249, 1203
Aromatic C-H Bending (in plane) and C-O stretching	1161, 1126, 1095, 1053, 1018	1161, 1099, 1057, 1007	1157, 1099, 1036, 1003
Aromatic C-H Bending (out of plane)	887, 829, 787, 760	890, 960, 814, 791, 764	871, 844, 802 764



Supplemental Figure 4. FTIR spectra of Pseudotannins in the finger print region. Peaks from 1590-1700 cm^{-1} were attributed to C=O stretching in the ester bonds. Peaks from 1415-1570 cm^{-1} were attributed to C=C stretching in the aromatic rings. Peaks from 1003-1390 cm^{-1} were attributed to a combination of C-O stretching and in-plane aromatic C-H bending. Peaks from 750-900 cm^{-1} were attributed to out-of-plane aromatic C-H bending



Supplementary Figure 5. Second derivative of FT-IR spectra in the fingerprint region (800-1800cm⁻¹) identifies negative peaks in each of the three spectra. While there are several distinct peaks (1712, 1658, 1600, 1438, 1411, 1384, 1157, 1122, and 1099) conserved among the three classes of pseudotannin, there are also several negative peaks that form unique signatures for each formulation. Distinct peaks at 883, 1014, and 1361 are unique to the polycatechol samples. A cluster of peaks from 1022-1072 cm⁻¹, distinct peaks at 852 and 1002cm⁻¹, and a lack of a distinct peak at 1530 are unique to the polyresorcinol samples. There are a cluster of peaks from 1349-1187cm⁻¹, including a lack of a distinct peak at 1292, 1300, and 1340, distinct peaks at 871 and 1036cm⁻¹ are unique to the polygallol samples.