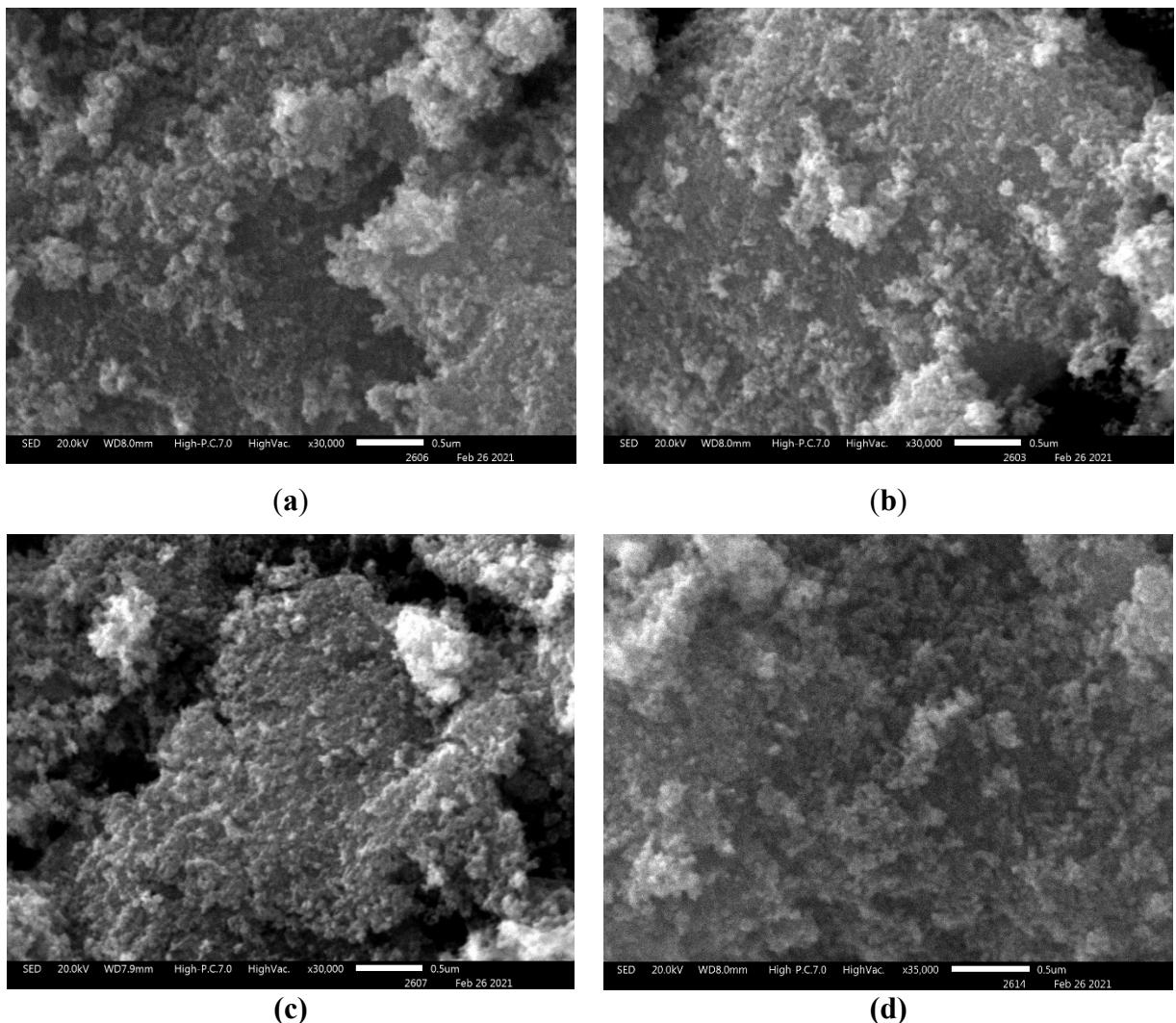
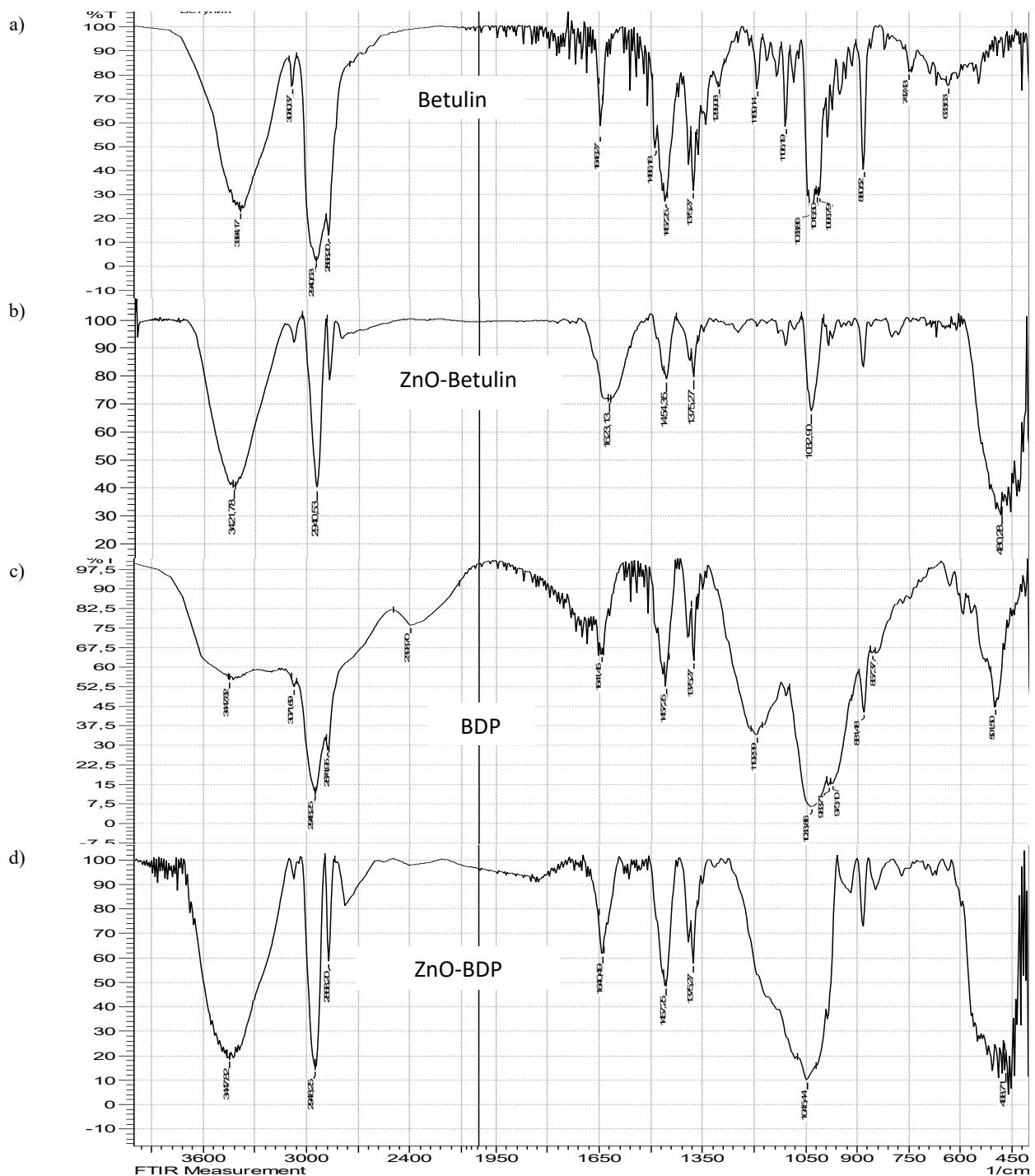


**Figure S1.** Physicochemical properties of ZnO NPs: PXRD pattern (a); FTIR-spectrum (b); PL spectrum of 27.2 mg% ethanolic dispersion of ZnO NPs, insert – digital image of dispersion under UV-lamp ( $\lambda_{\text{ex}} = 254 \text{ nm}$ ) (c); UV spectrum of ZnO NPs in ethanol, 13.6 mg/%, blanc – ethanol (d). Note: curve 1 and curve 2 (Figure S1c,d) indicate spectra recorded in this paper (curve 2), and our paper [17] published early (curve 1) of ZnO NPs obtained by the same methods.



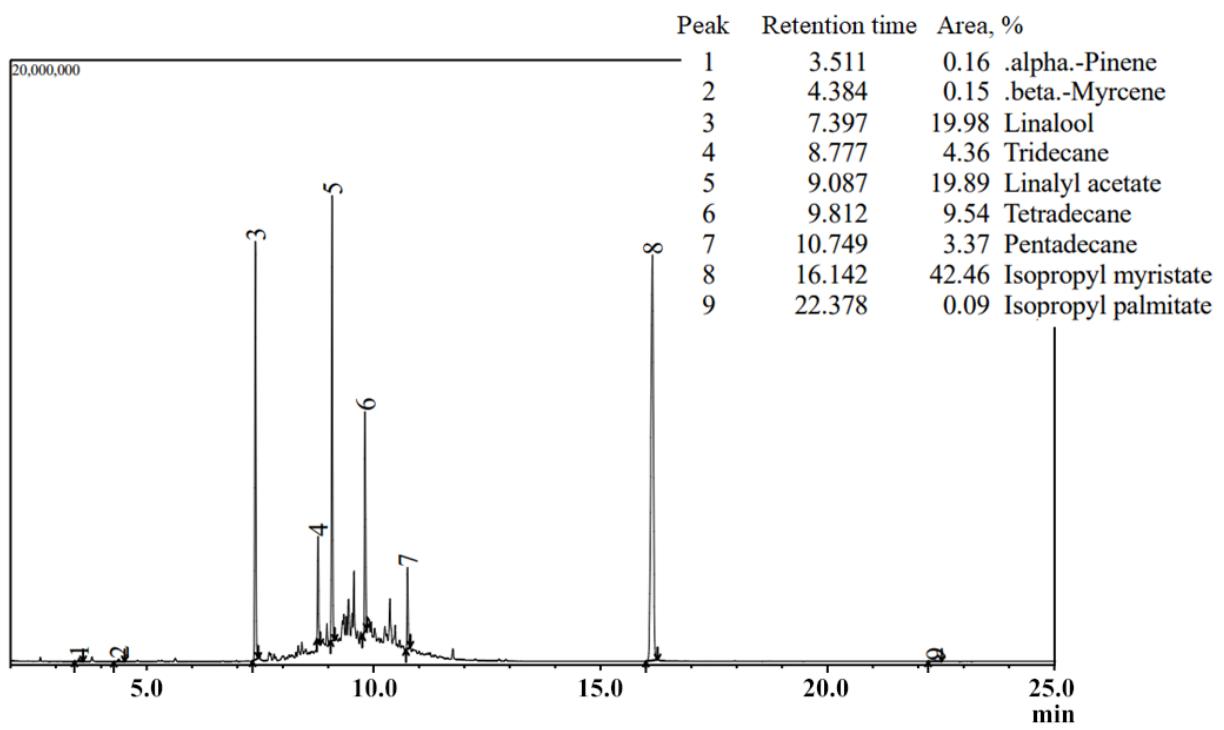
**Figure S2.** Comparison of SEM images of ZnO NPs (a, c) with SEM images of ZnO NPs modified by BDP (b, d),  $\times 30\,000$ . Note: Figures S2c, d indicate SEM images recorded in this paper. Figures S2a, b were obtained in our paper [25] early.



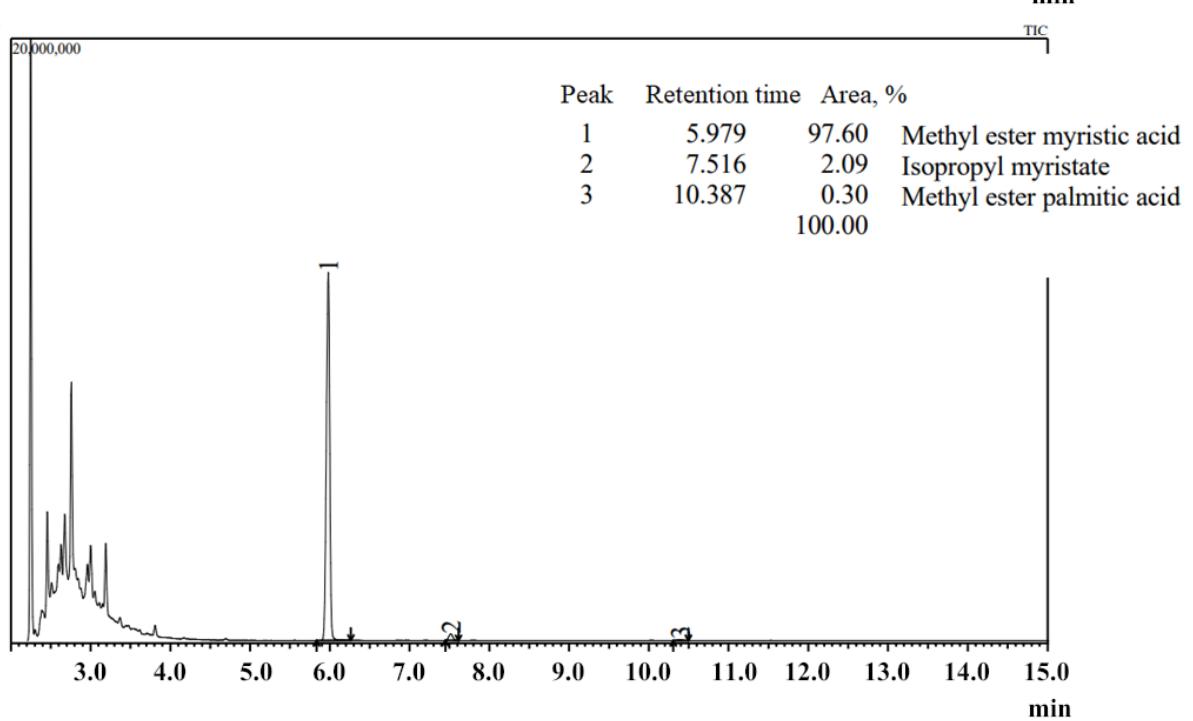
Sample	3450-3350 cm <sup>-1</sup> v (OH)	2900-2800 cm <sup>-1</sup> v (CH, CH <sub>2</sub> , CH <sub>3</sub> )	1800-1600 cm <sup>-1</sup> $\delta$ (P-OH), $\rho$ (PO-H), v (CH <sub>2</sub> ), $\delta$ (H <sub>2</sub> O)	1200-900 cm <sup>-1</sup> v (HC-OH, H <sub>2</sub> C- OH)	800-400 cm <sup>-1</sup>	
					$\delta$ (O-P-O) v O-PO <sub>3</sub> v (P=O)	v ZnO NPs
Betulin	3384	2941, 2868	1646	1050, 1034	-	-
ZnO-Betulin	3422	2941, 2870	1623	1033	-	480
BDP	3448	2948, 2875	1641	1034	502	-
ZnO-BDP	3448	2948, 2868	1640	1045	-	469

**Figure S3.** FTIR spectra of Betulin (a), ZnO NPs modified by Betulin (b), BDP (c), ZnO NPs modified by BDP (d).

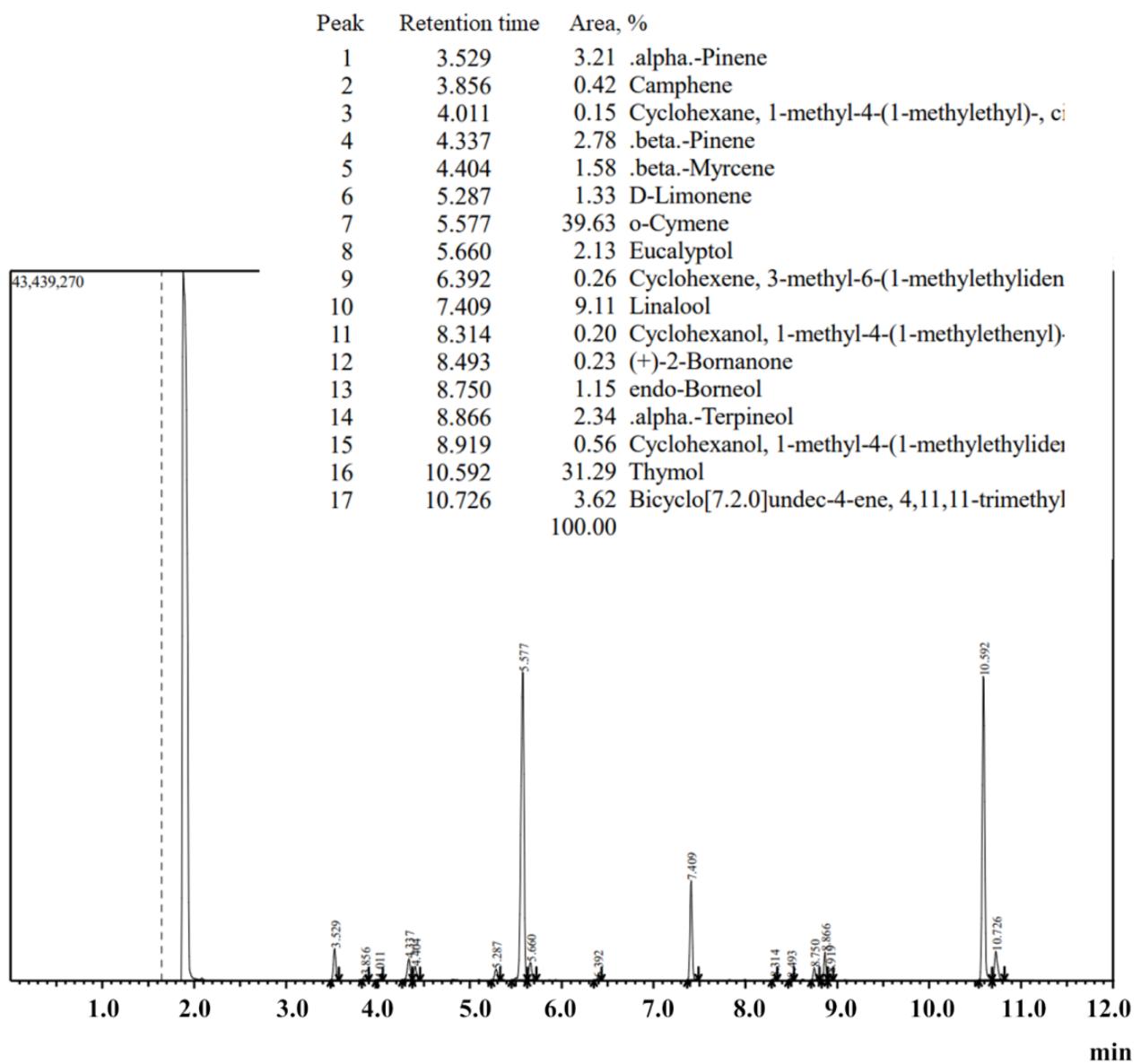
a)



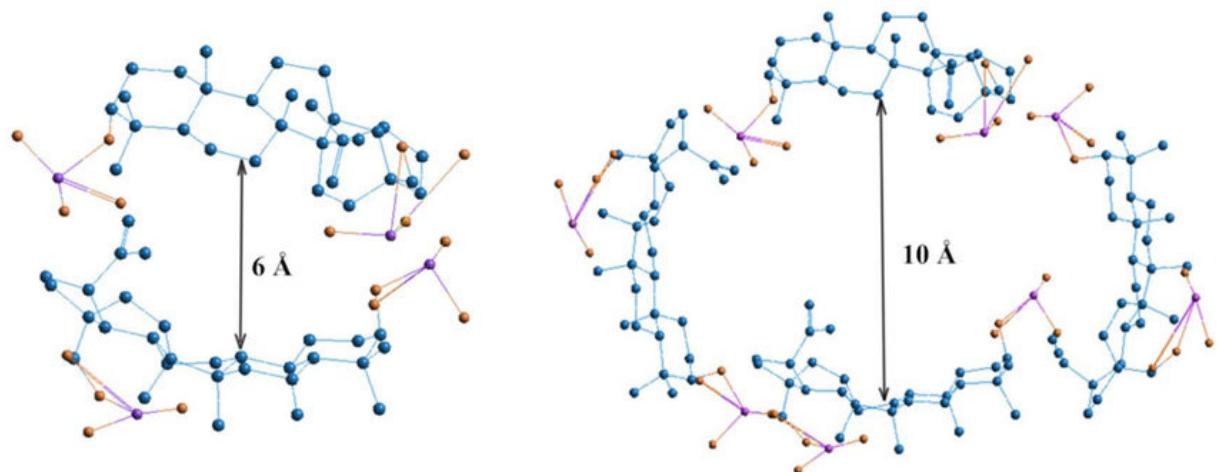
b)



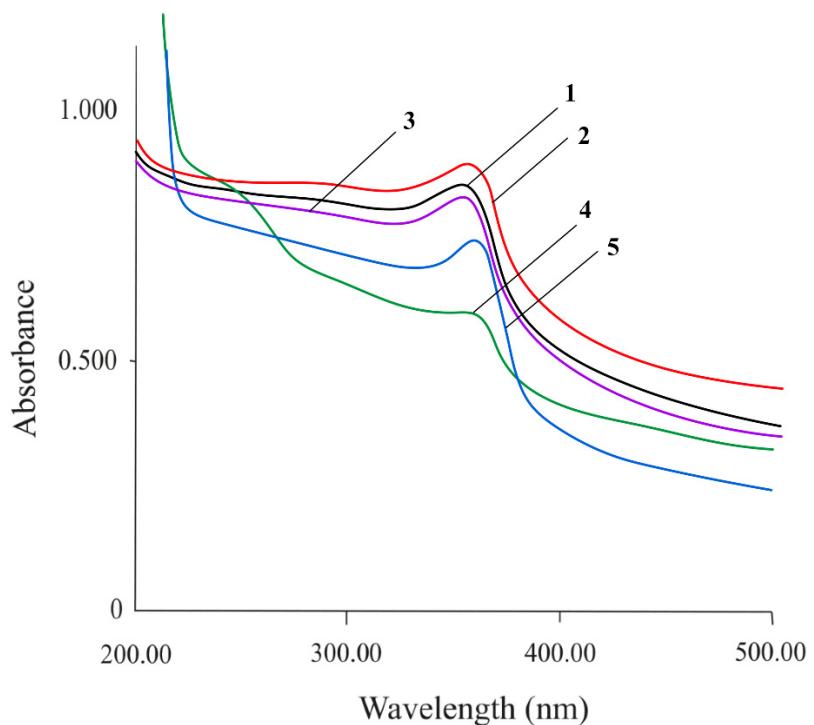
**Figure S4.** GL chromatograms and composition of lavender oil before transesterification (a) and after methylation (b).



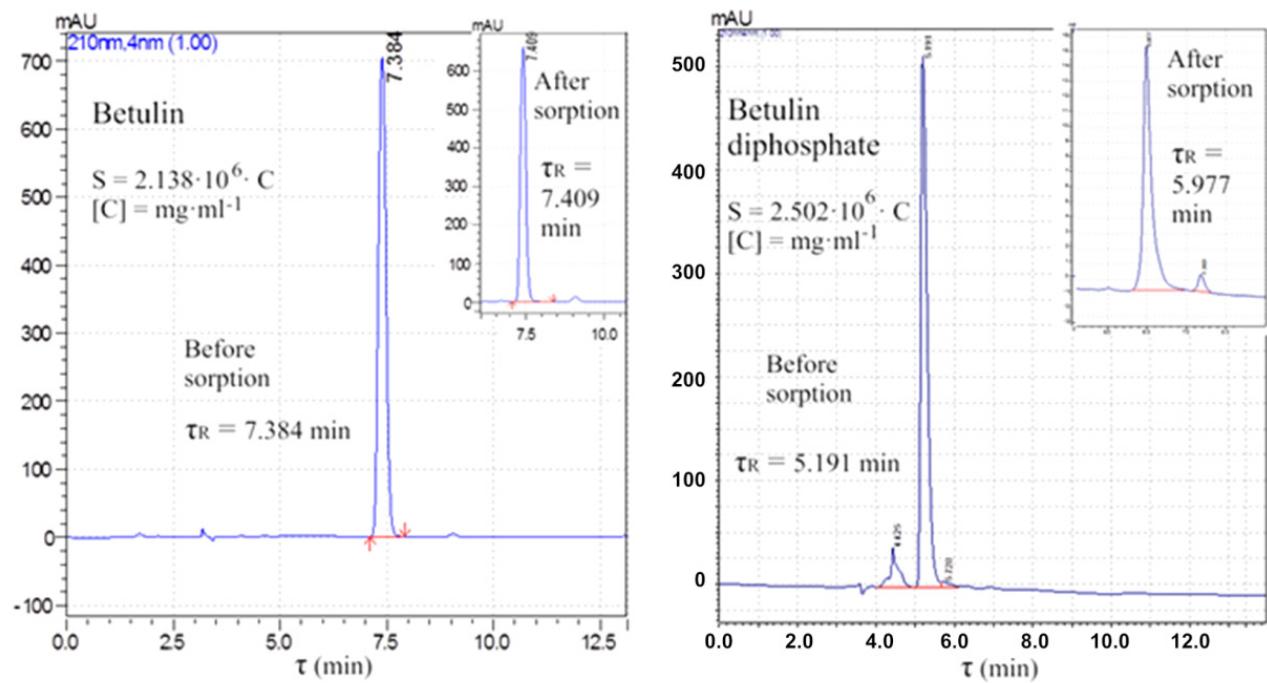
**Figure S5.** GL chromatogram and composition of thymol.



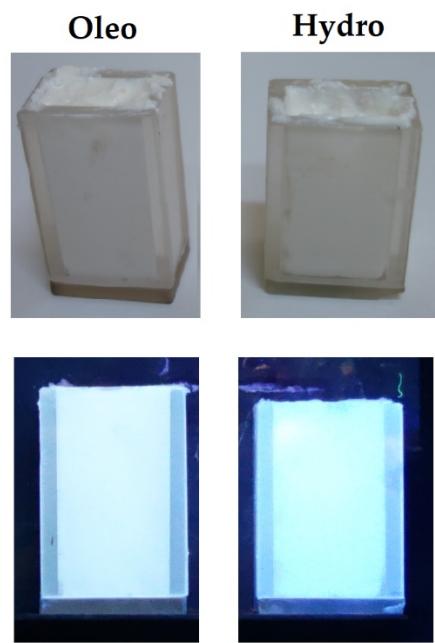
**Figure S6.** Geometric visualization of BDP as a component of inclusion complexes formed by two and four molecules. Quantum-chemical calculations were provided by HyperChem 8.0, Hypercube Inc, Gainesville, FL, USA (semiempirical method AM1). Size of the void between BDP molecules is 6 Å for dimer and 10 Å for tetramer.



**Figure S7.** UV-spectra of samples of ZnO NPs dispersions (27 mg/%) in ethanol 95%: ZnO NPs (1); ZnO NPs pretreated with: alcohol solutions 2% lavender oil (2); alcohol solutions of 1.4% thymol (3); 2% lavender oil and 0.30% betulin diphosphate (4); 2% lavender oil and 0.22% betulin (5).



**Figure S8.** HPL chromatograms of initial solutions of betulin and betulin diphosphate (insert – HPL chromatograms after sorption on the ZnO NPs surface).



**Figure S9.** Digital images of gel-like dispersions (Oleo ZnO NPs-BDP–thymol-lavender and Hydro ZnO NPs-BDP–lavender) under daylight and UV-lamp ( $\lambda_{\text{ex}} = 254 \text{ nm}$ ).

Oleo ZnO NPs-BDP – lavender



Day 3

Hydro ZnO NPs-BDP



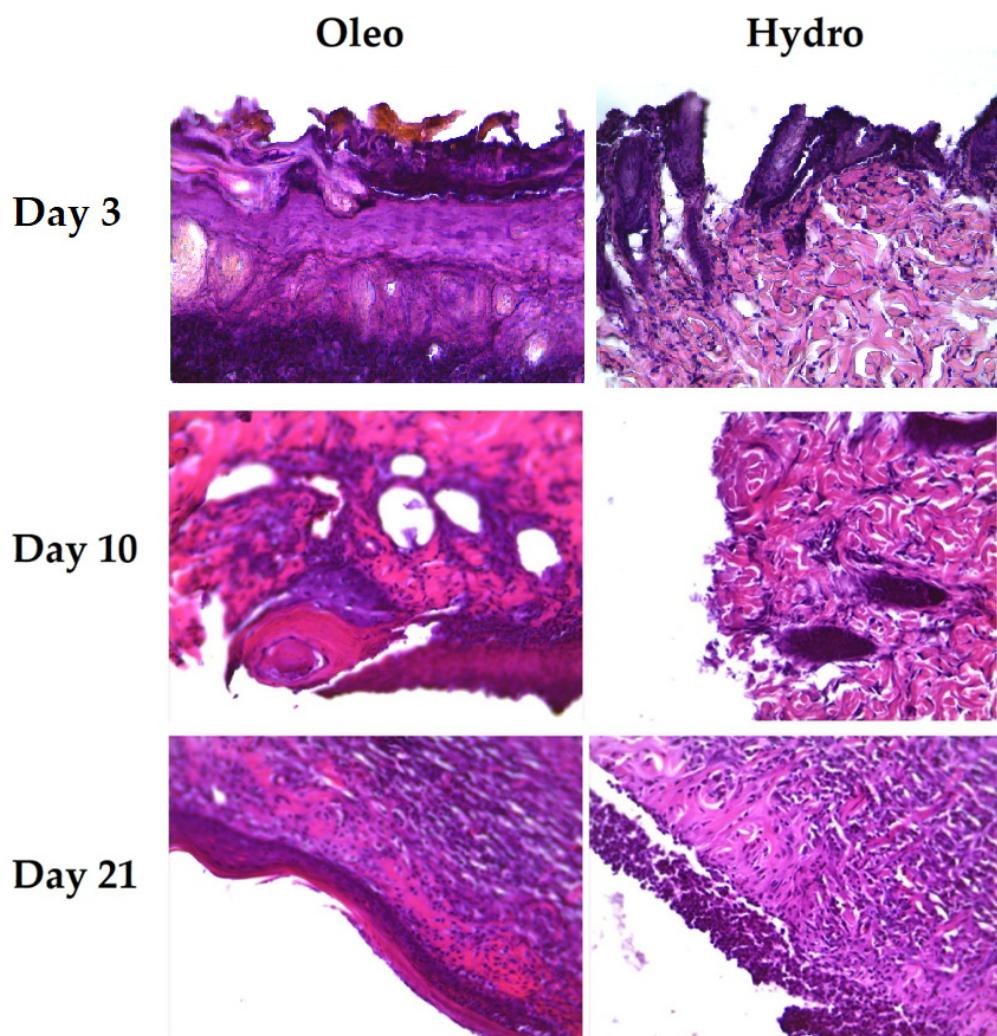
Day 10



21 Day



**Figure S10.** Wound state under treatment by Oleo ZnO NPs-BDP-thymol-lavender and by Hydro ZnO NPs-BDP-lavender for 3, 10 and 21 days.



**Figure S11.** Histological images under treatment by Oleo ZnO NPs-BDP-thymol-lavender and by Hydro ZnO NPs-BDP-lavender for 10 and 21 days.