**Supporting Information**

# Photoantibacterial poly(vinyl)chloride films applying curcumin derivatives as bio-based plasticizers and photosensitizers

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## Contents

## 1. Characterization spectra of curcumin derivatives 2-5

Compound **2**: $^{1}$H-NMR, $^{13}$C-NMR, mass spectra and FTIR.

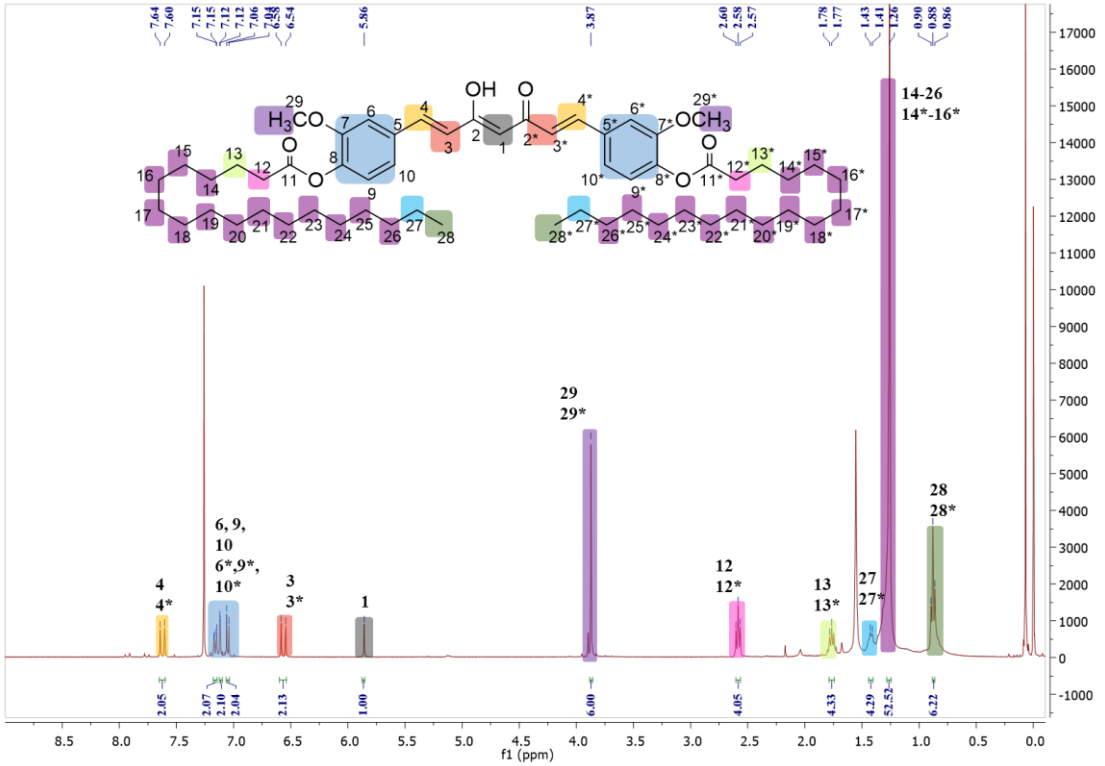


Figure S1. $^{1}$H-NMR of compound **2**, recorded in $CDCl_3$.

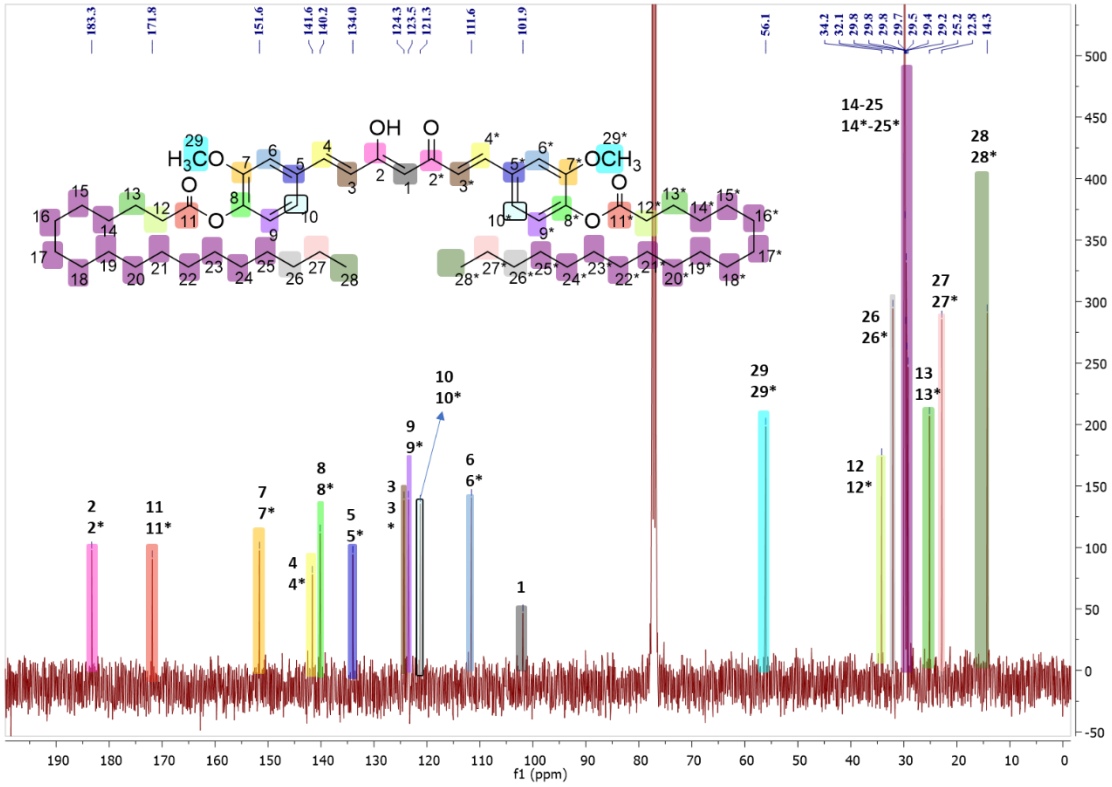


Figure S2. $^{13}$C-NMR of compound **2**, recorded in $CDCl_3$.

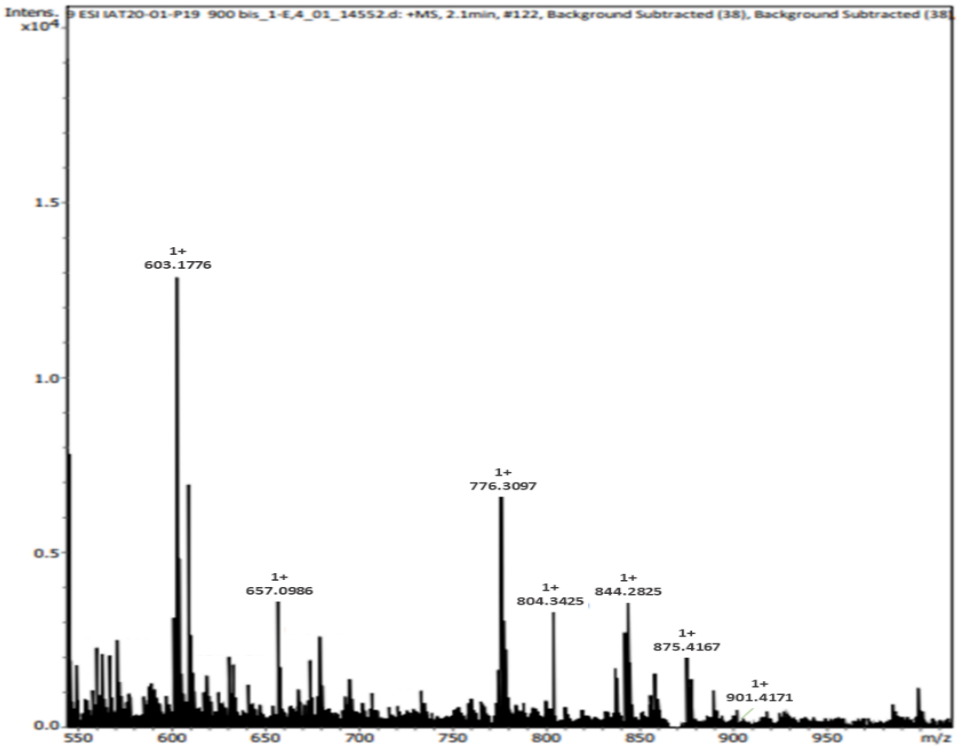


Figure S3. ESI-TOF mass spectrum of compound **2**.

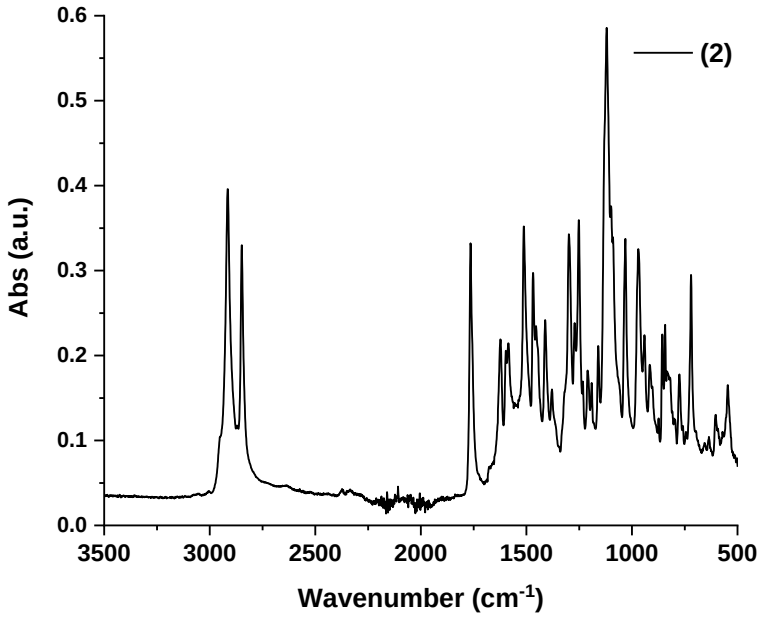


Figure S4. FTIR spectrum of compound **2**: 2916 $cm^{-1}$ (ν OH), 2849 $cm^{-1}$ (ν CH), 1740 $cm^{-1}$ (ν C=O) and 1119 $cm^{-1}$ (ν C-OR).

Compound **3**: $^{1}$H-NMR, $^{13}$C-NMR, mass spectra and FTIR.

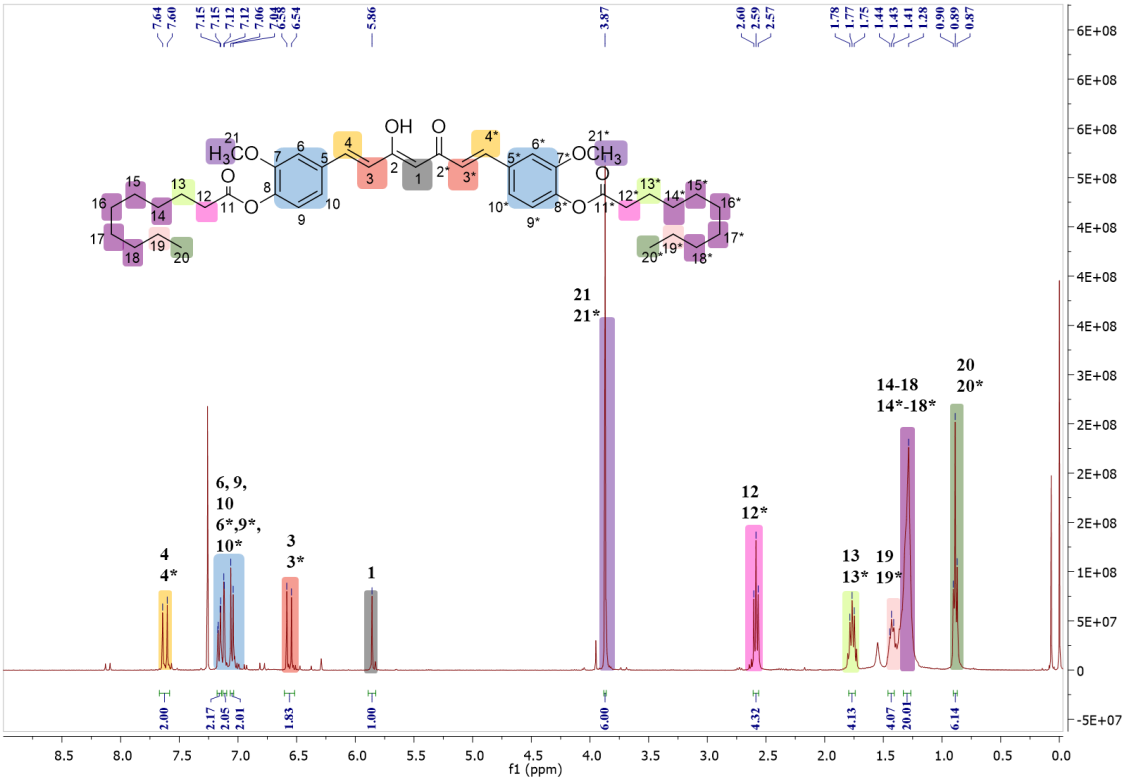


Figure S5. $^{1}$H-NMR of compound **3**, recorded in $CDCl_3$.

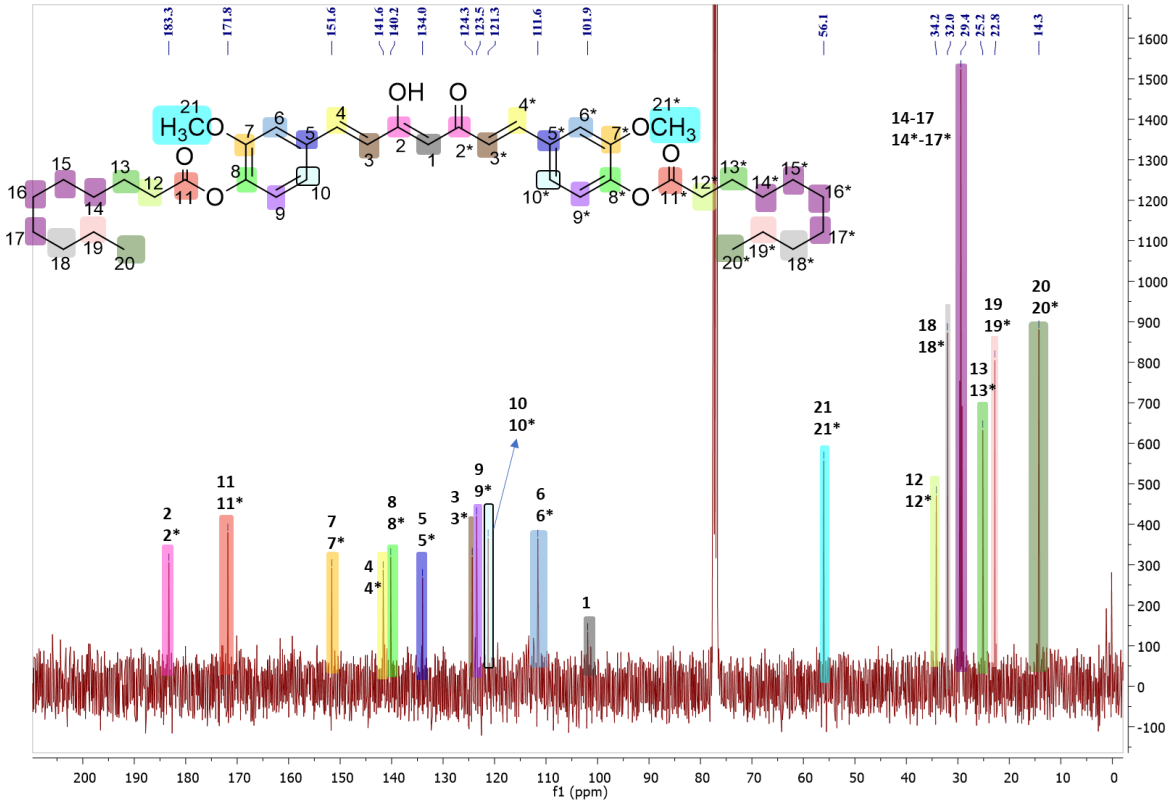


Figure S6. $^{13}$C-NMR of compound **3**, recorded in $CDCl_3$.

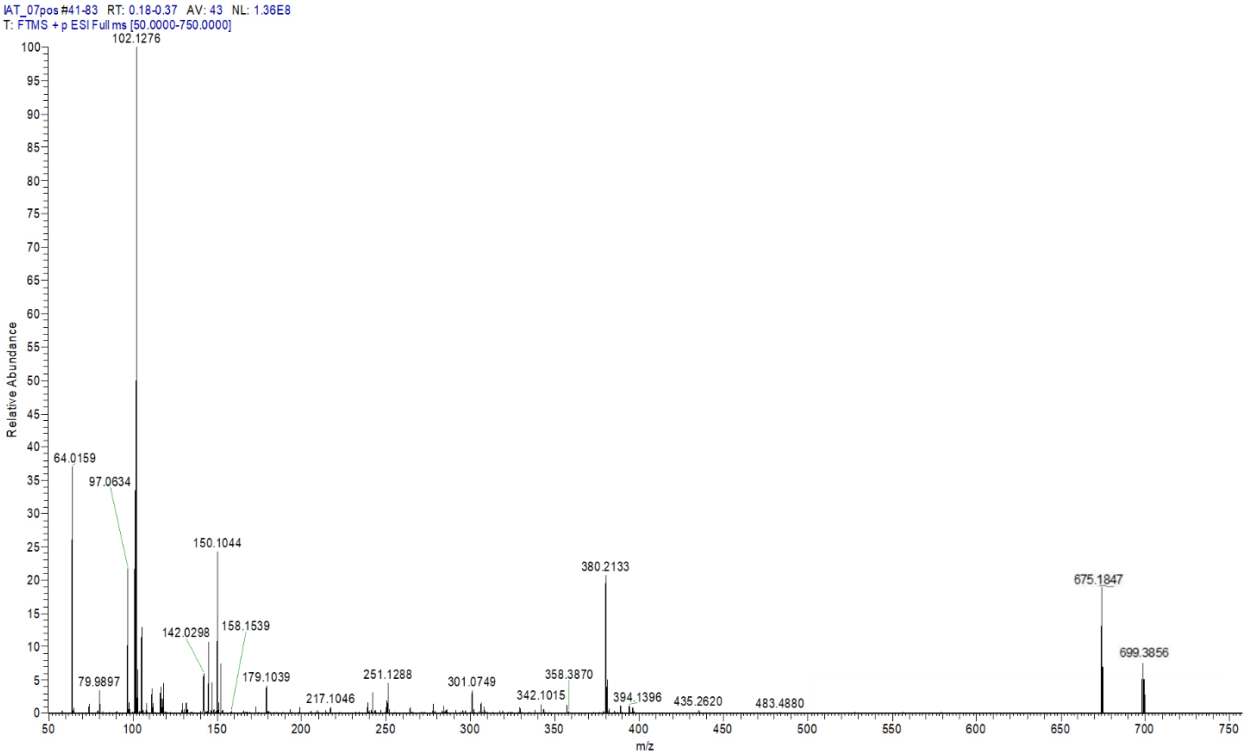


Figure S7. ESI-TOF mass spectrum of compound **3**.

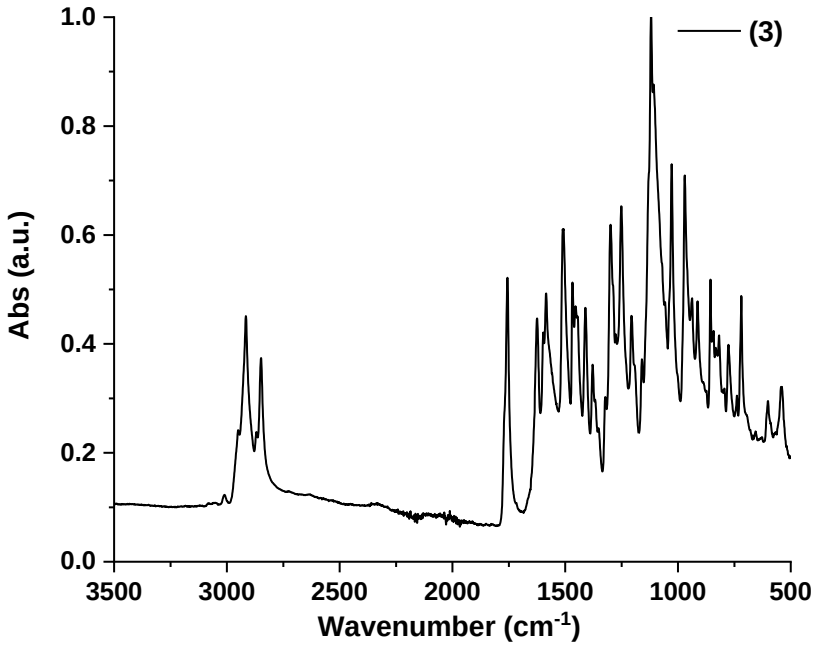


Figure S8. FTIR spectrum of compound **3**: 2911 $cm^{-1}$ (ν OH), 2844 $cm^{-1}$ (ν CH), 1766 $cm^{-1}$ (ν C=O) and 1115 $cm^{-1}$ (ν C-OR).

Compound **4**: $^{1}$H-NMR, $^{13}$C-NMR, mass spectra and FTIR.

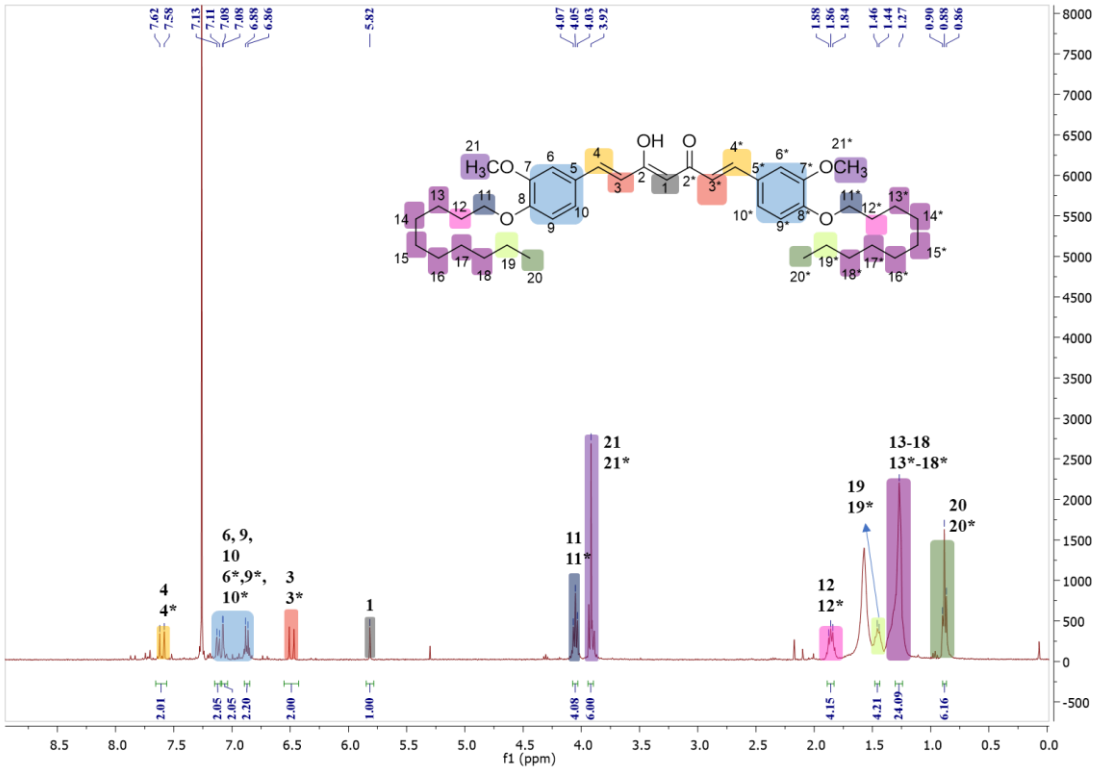


Figure S9. $^{1}$H-NMR of compound **4**, recorded in $CDCl_3$.

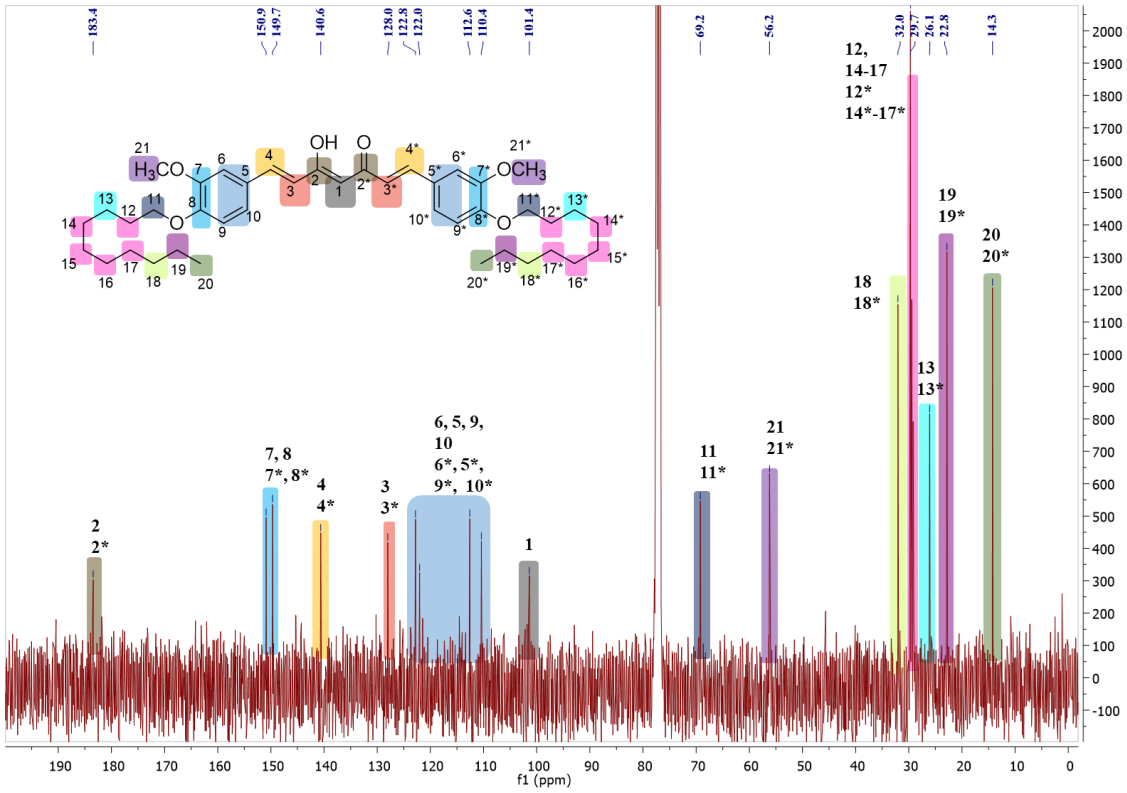


Figure S10. $^{13}$C-NMR of compound **4**, recorded in $CDCl_3$.

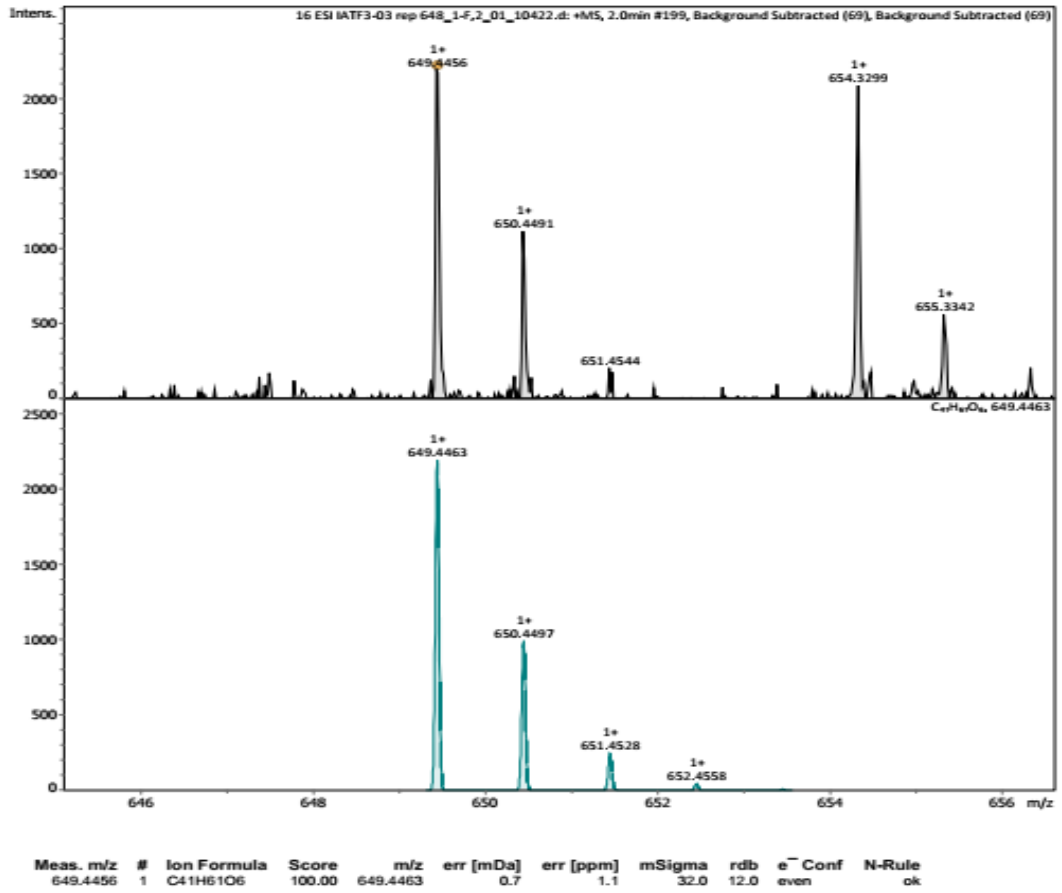


Figure S11. ESI-TOF mass spectrum of compound **4**.

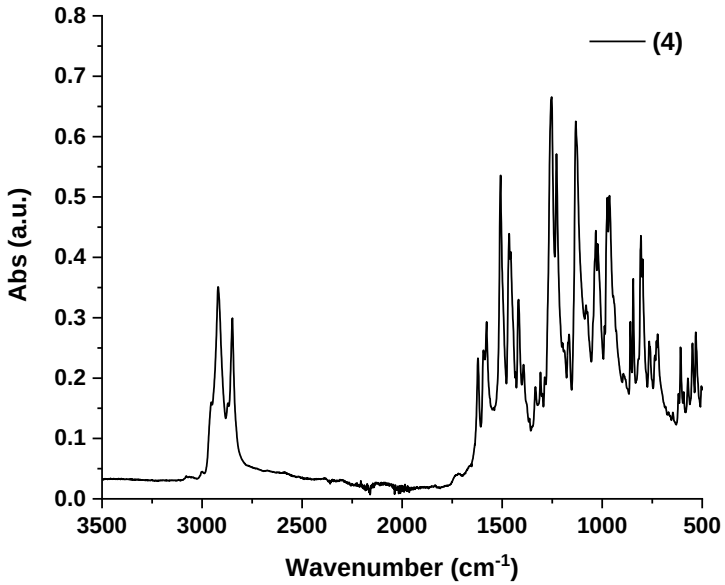


Figure S12. FTIR spectrum of compound **4**: 2921 $cm^{-1}$ (ν OH), 2845 $cm^{-1}$ (ν CH).

Compound **5**: $^{1}$H-NMR, $^{13}$C-NMR, mass spectra and FTIR.

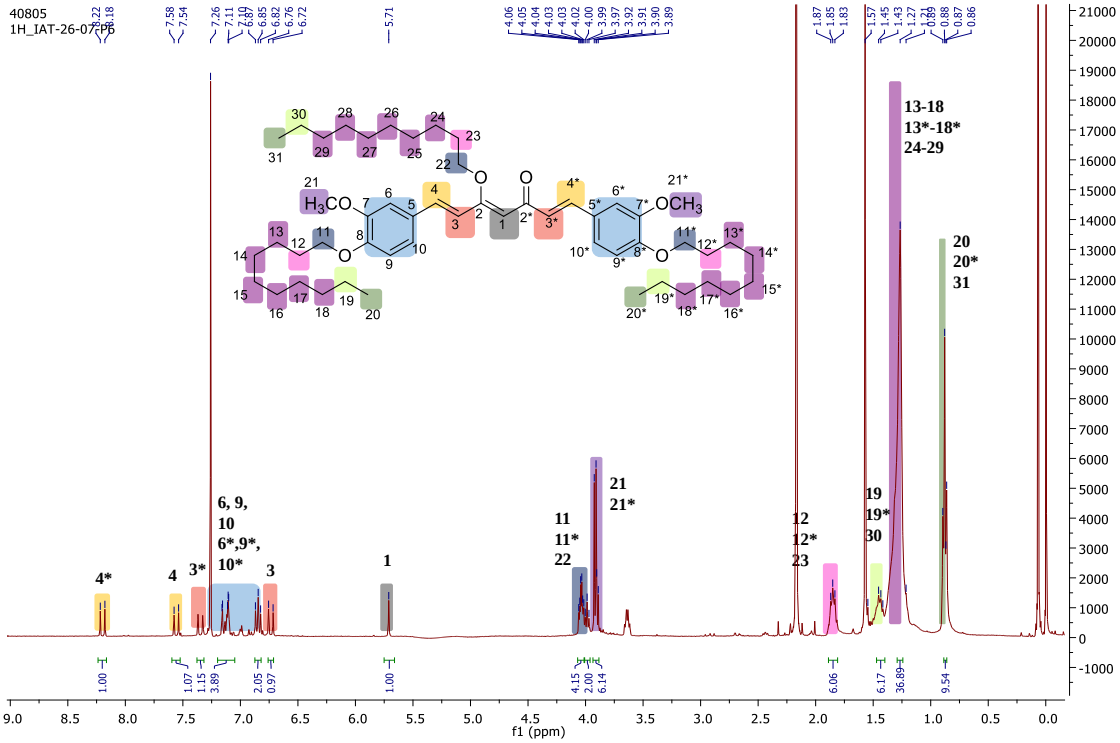


Figure S13. $^{1}$H-NMR of compound **5**, recorded in $CDCl_3$.

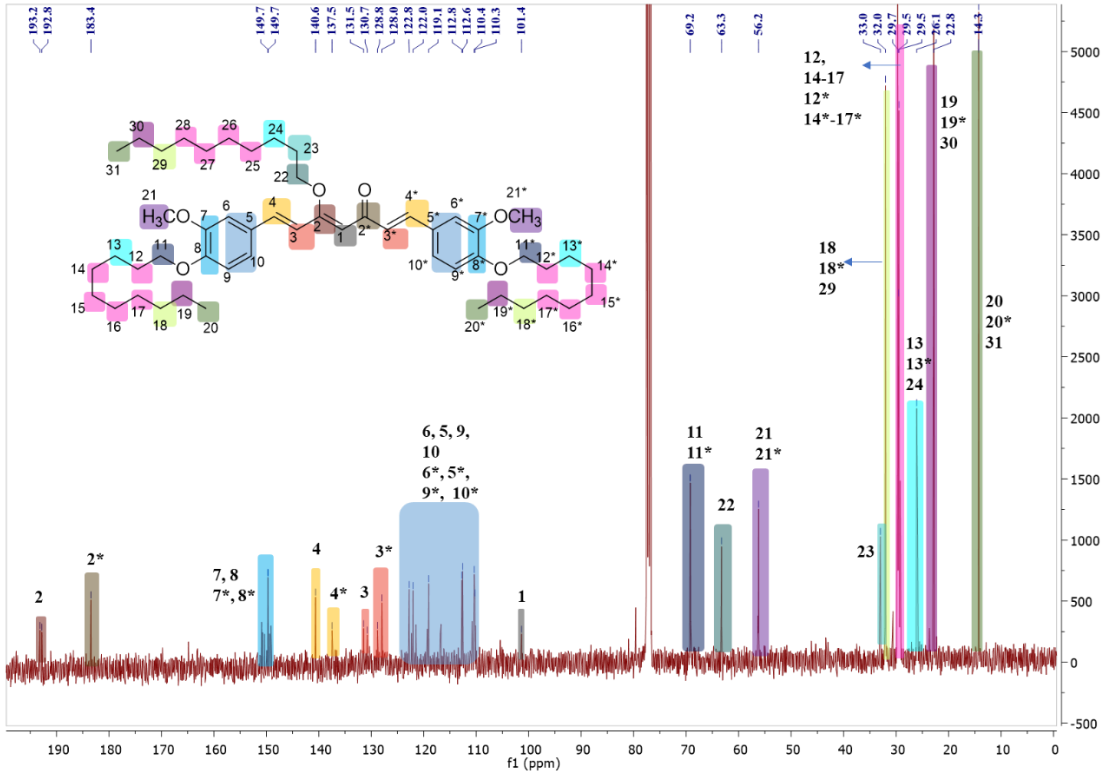


Figure S14. $^{13}$C-NMR of compound **5**, recorded in $CDCl_3$.

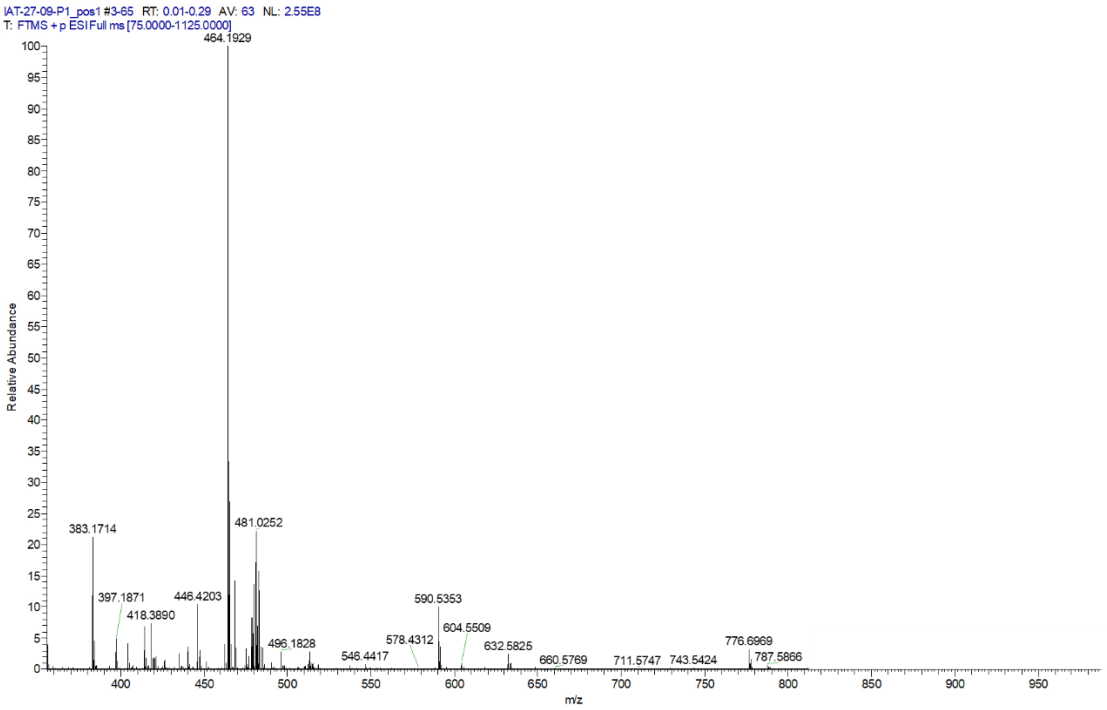


Figure S15. ESI-TOF mass spectrum of compound **5**.

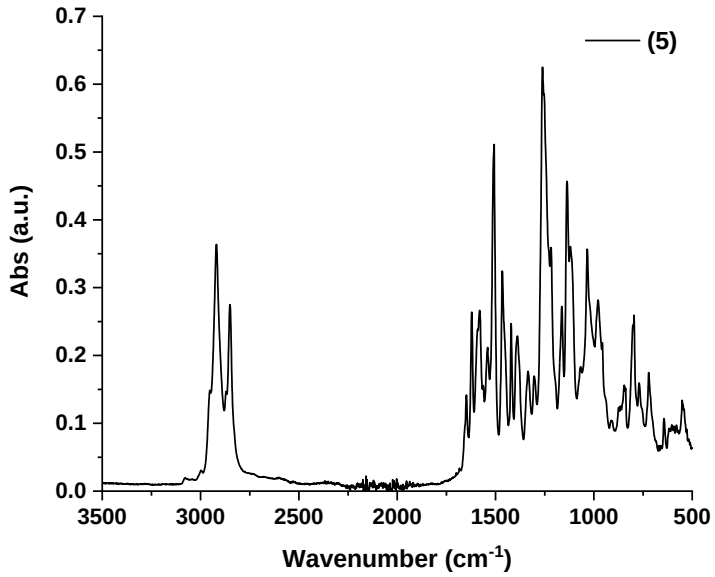


Figure S16. FTIR spectrum of compound **5**. 2926 $cm^{-1}$ (ν OH), 2844 $cm^{-1}$ (ν CH).

## 2. Photophysical characterization of curcumin derivatives 1-5

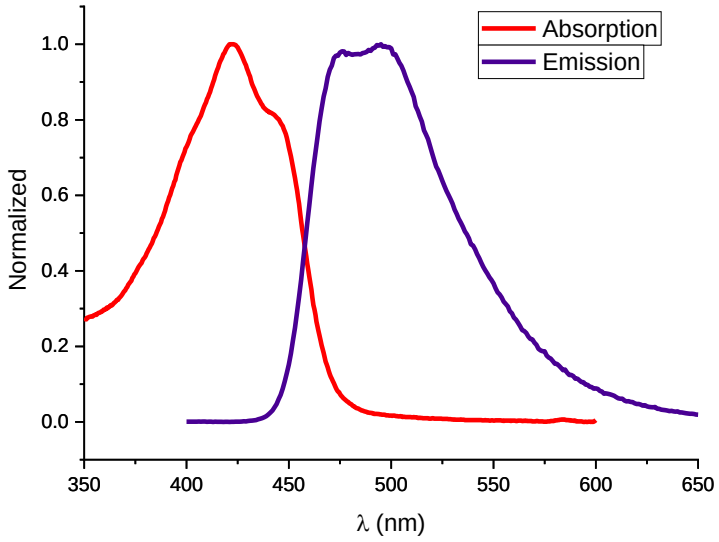


Figure S17. Normalized absorption (red) and emission (dark purple) spectra of curcumin **1**, recorded in THF.

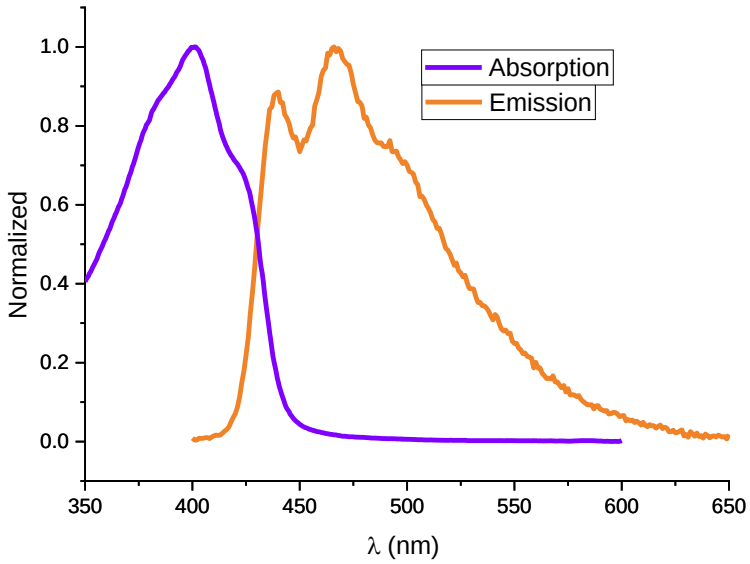


Figure S18. Normalized absorption (purple) and emission (orange) spectra of curcumin derivative **2**, recorded in THF.

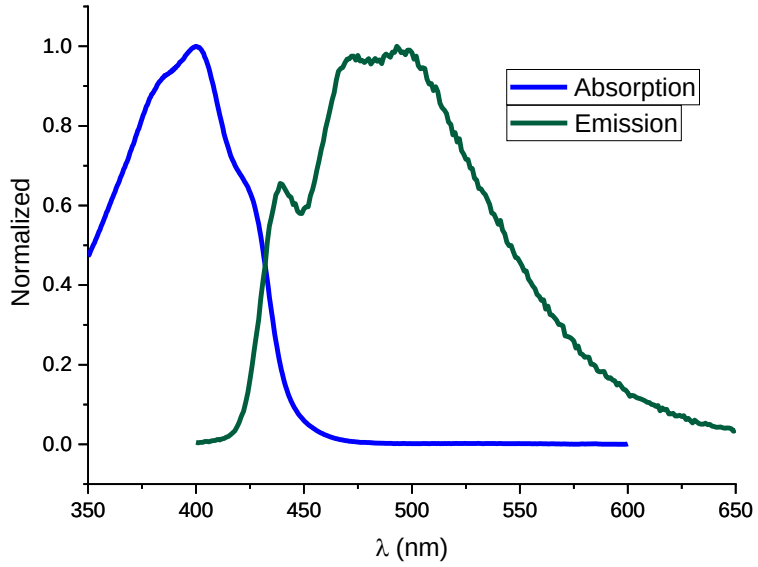


Figure S19. Normalized absorption (blue) and emission (dark green) spectra of curcumin derivative **3**, recorded in THF.

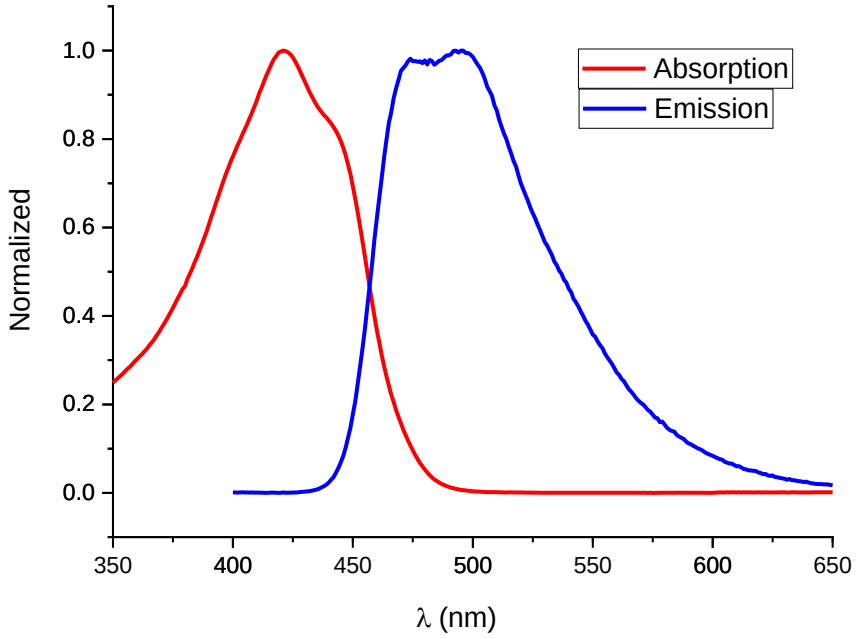


Figure S20. Normalized absorption (red) and emission (blue) spectra of curcumin derivative **4**, recorded in THF.

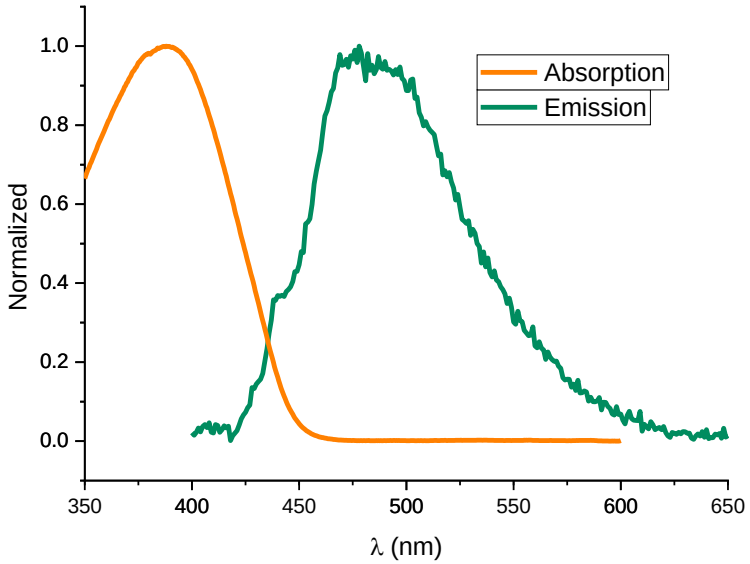


Figure S21. Normalized absorption (orange) and emission (green) spectra of curcumin derivative **5**, recorded in THF.

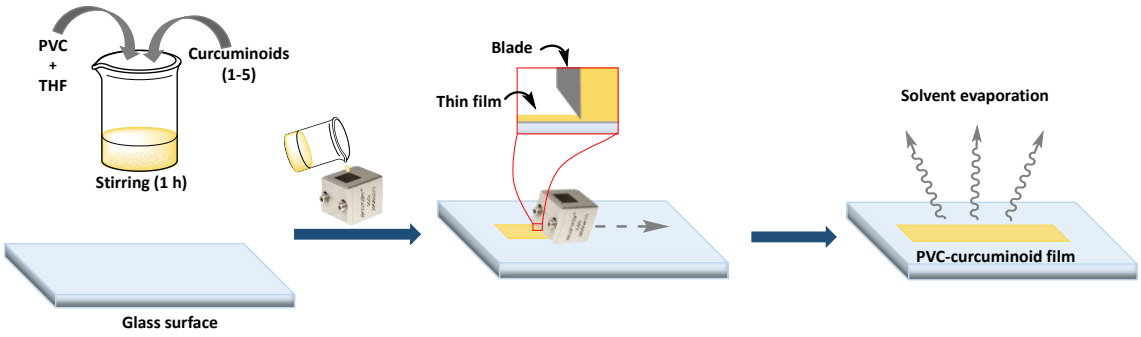


Figure S22. Schematics representing doctor blade type film coating procedure.

## 3. Characterization of PVC-curcumin materials

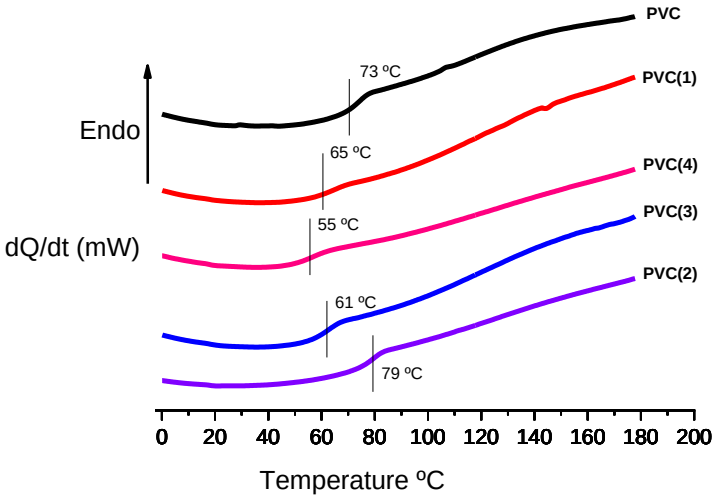


Figure S23. DSC curves for Tg determination.

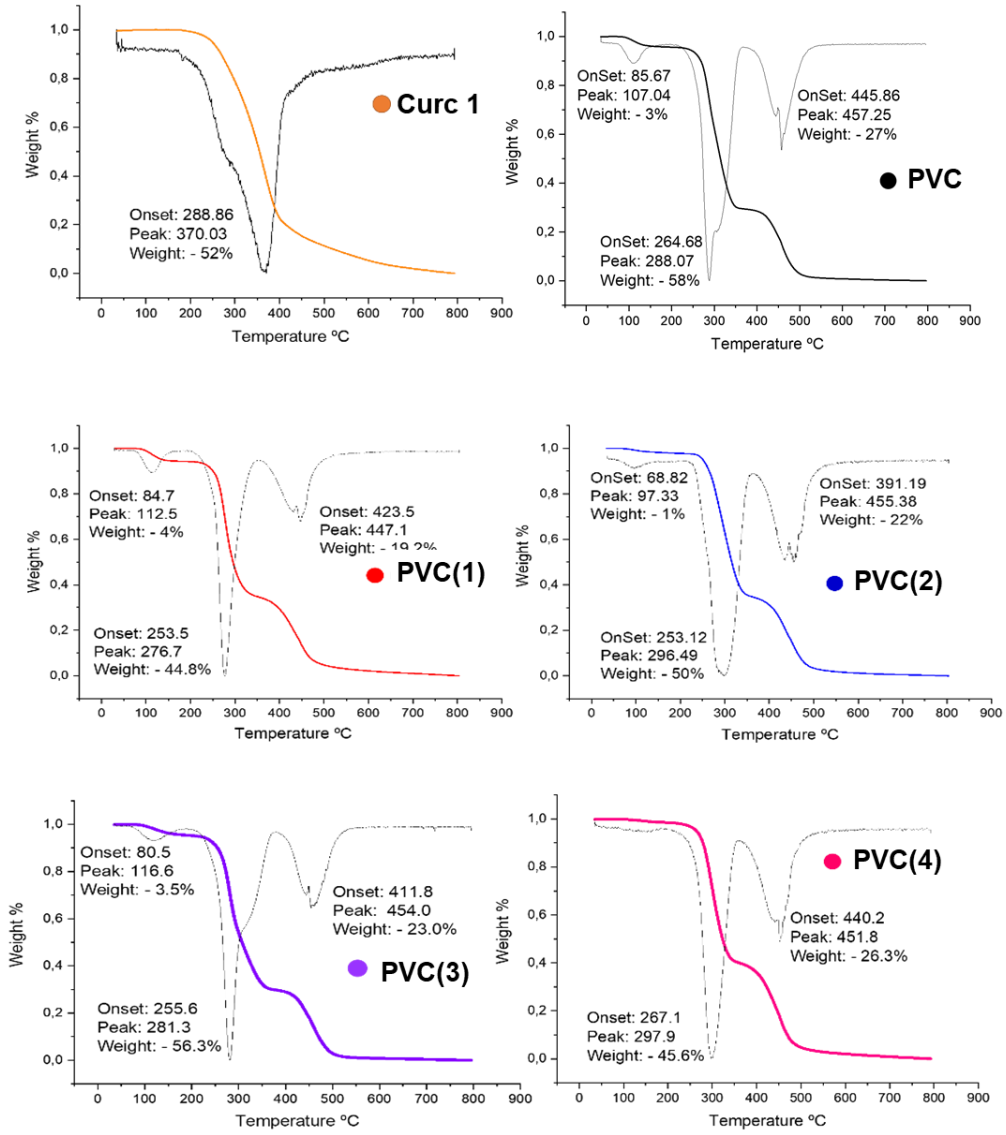


Figure S24**.** TGA and dTGA spectra of curcumin, PVC and the PVC films doped with 30% (w/w) of curcumin derivatives: 1 - Curcumin (orange); PVC (black); PVC(**1**)-curc - red; PVC(**2**)-esterC18 - blue; PVC(**3**)-esterC10 - purple; PVC(**4**)-etherC10 – pink.

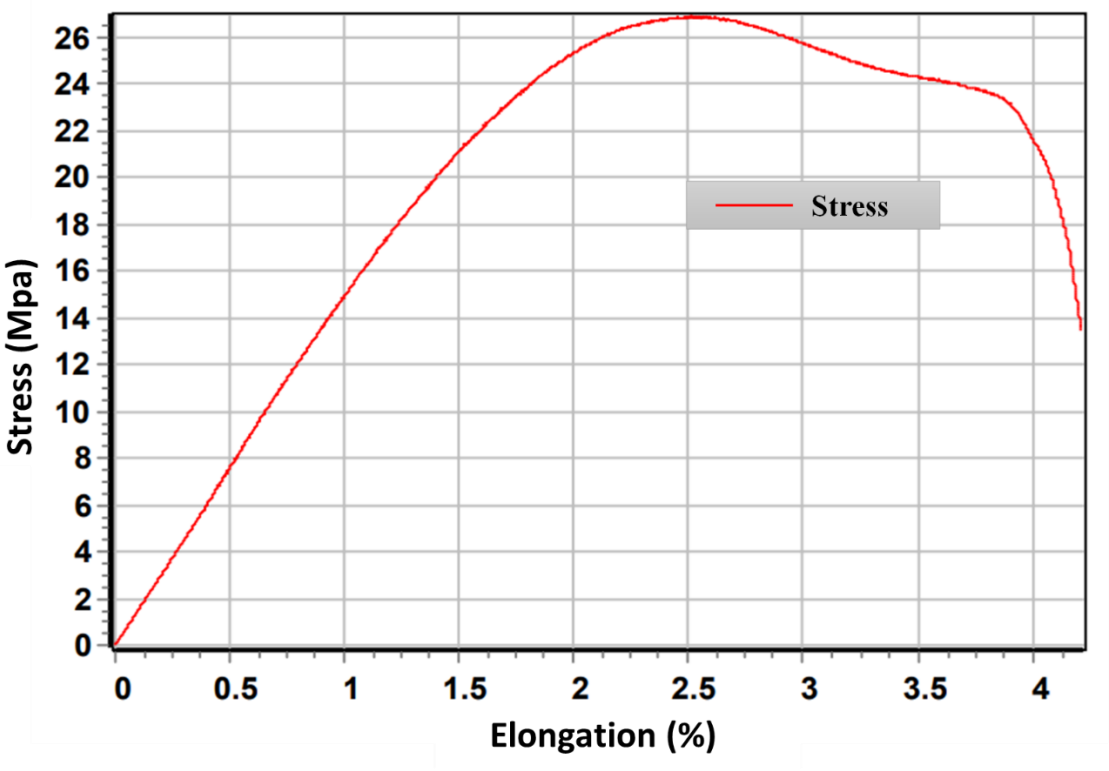


Figure S25. Stress-strain curve for film: PVC.

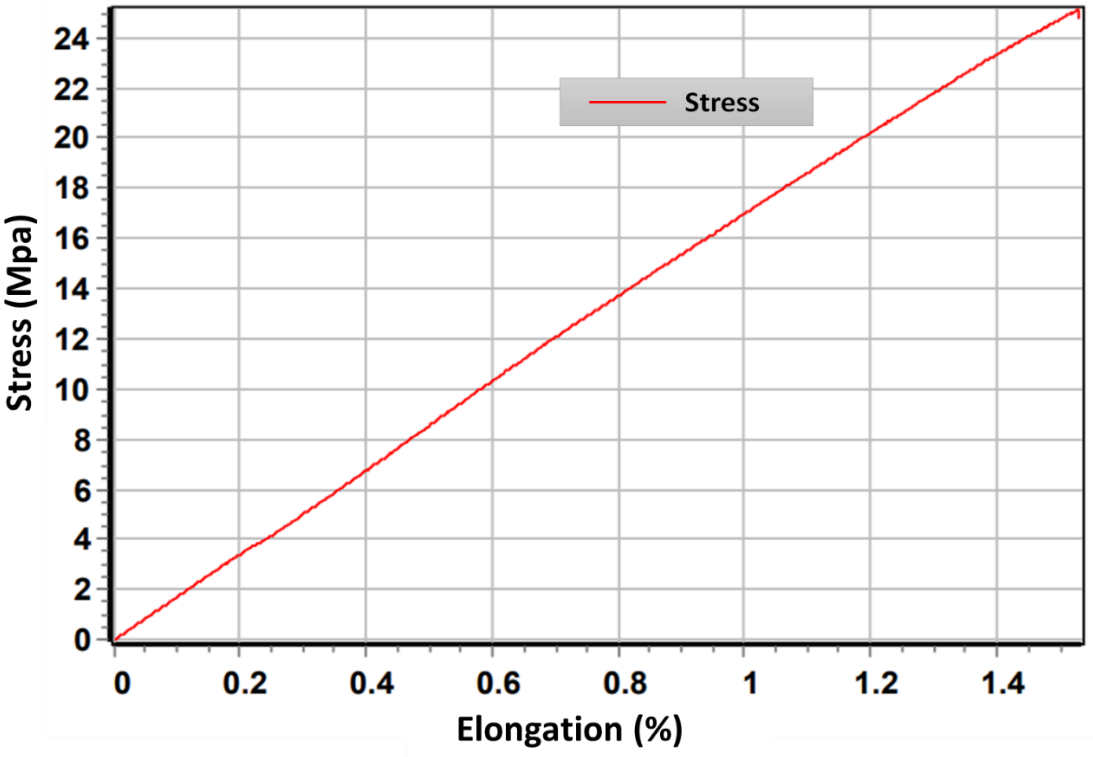


Figure S26. Stress-strain curve for film: PVC(**1**)-curc.

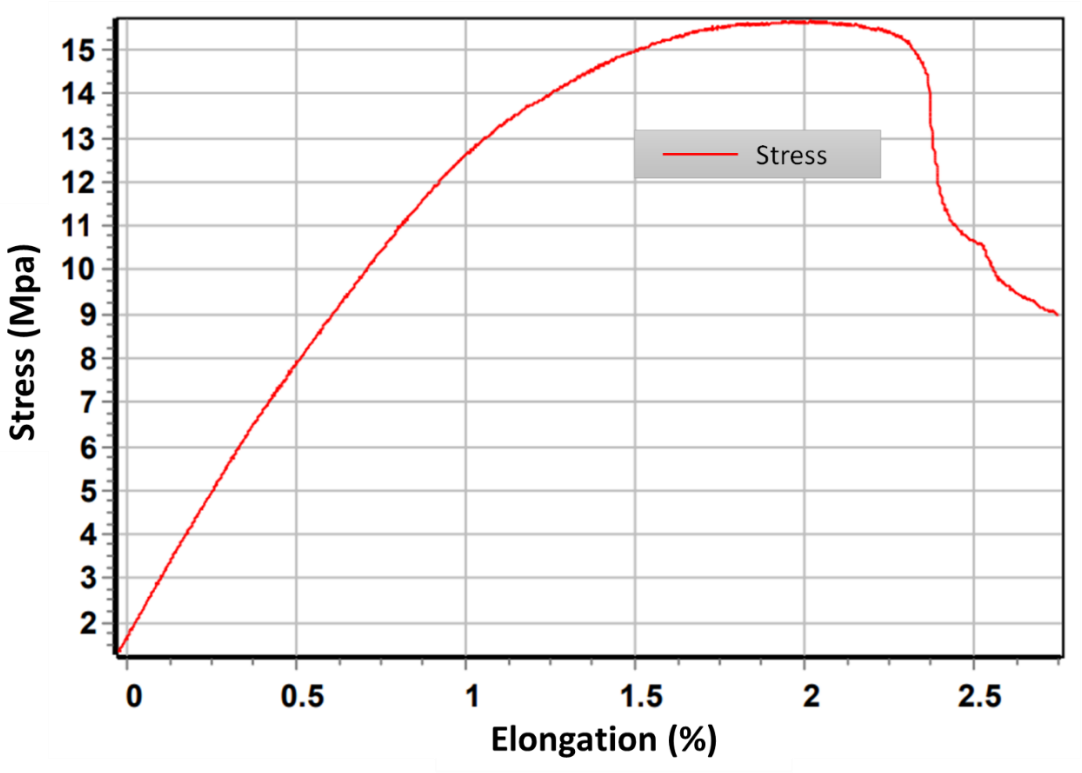


Figure S27. Stress-strain curve for film: PVC(**2**)-esterC18.

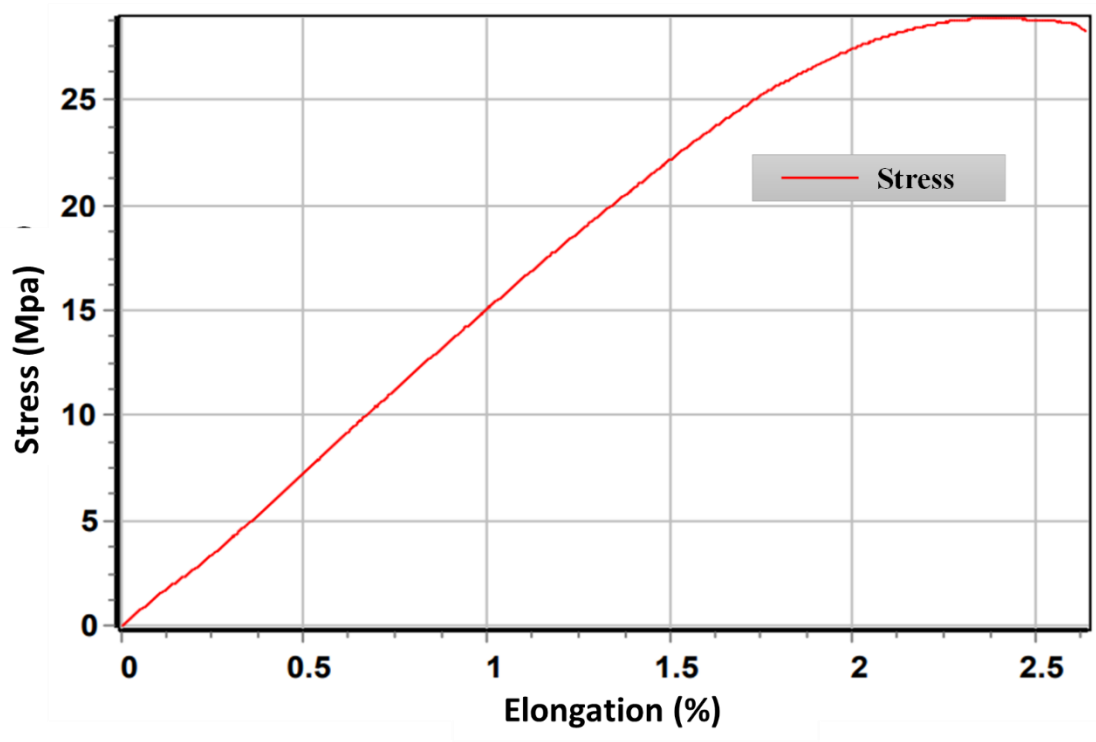


Figure S28. Stress-strain curve for film: PVC(**3**)-esterC10.

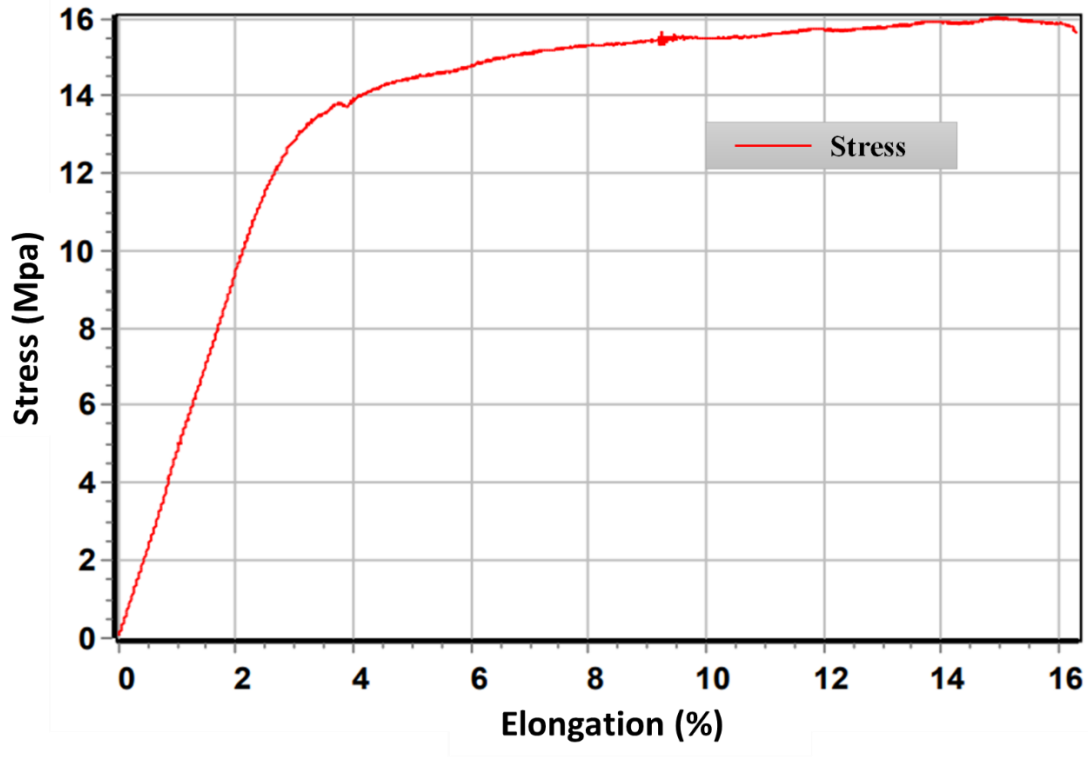


Figure S29. Stress-strain curve for film: PVC(**4**)-etherC10.