

## **SUPPLEMENTARY INFORMATION**

### **Supplementary Table 1**

#### **Calibration of radiocarbon data on ancient *Commiphora* seed using OxCal 4.4 (1-3)**

| ETH <sup>a</sup> no. | UZ <sup>b</sup> no | C-14 age <sup>c</sup> | $\delta^{13}\text{C}$ (‰) | Calibration        |                    |
|----------------------|--------------------|-----------------------|---------------------------|--------------------|--------------------|
|                      |                    |                       |                           | 1 $\sigma$ (68.3%) | 2 $\sigma$ (95.4%) |
| 40349                | 5834               | 940 $\pm$ 35          | -18.1 $\pm$ 1.0           | 1040 – 1156 cal CE | 1026 – 1202 cal CE |

<sup>a</sup> Swiss Federal Institute of Technology, <sup>b</sup> UZ (University of Zurich)

<sup>c</sup> Sample (fraction of the operculum) weight was 8.8 mg giving a CO<sub>2</sub> pressure in the reactor of 503 mbar. Organic C in the cracked sample was 41.0%. One sample was analysed (no repeat available due to small sample size). All data produced is shown here.

### **Supplementary Table 2**

#### **Measured and modelled (using different contamination scenarios) C-14 ages of the seed shell.**

| HU LMK G1.SF<br>(sample name) |         |    |            | Calibrated<br>ages (2 s) | Median<br>age |
|-------------------------------|---------|----|------------|--------------------------|---------------|
| ETH no. 40349<br>UZ no 5834   | C-14age | SD | pMC<br>(%) | calCE                    | (calCE)       |
| measured                      | 940     | 35 | 88.3       | 1026 -<br>1202           | 1103          |
| 1% addition of fresh<br>C*    | 957     | 35 | 88.1       | 1021 -<br>1169           | 1099          |
| 2% addition of fresh<br>C*    | 972     | 35 | 87.9       | 996 - 1161               | 1095          |
| 3% addition of fresh<br>C*    | 988     | 35 | 87.8       | 993 - 1157               | 1085          |

\* Corrected radiocarbon age assuming that 1, 2 or 3% of modern carbon was absorbed in the sample.

### **Supplementary Table 3**

#### **List of major compounds detected in “Sheba” resin by GC-MS (indicated in Supplementary Fig 2)**

| Peak | RT    | Compound   |
|------|-------|--|
| 1    | 8.47  | $\alpha$ -pinene*                                    |
| 2    | 9.52  | $\beta$ -pinene*                                     |
| 3    | 10.69 | limonene*  |
| 4    | 42.89 | unknown triterpene C <sub>30</sub> H <sub>50</sub> O |
| 5    | 42.98 | $\beta$ -amyrin*                                     |
| 6    | 43.34 | unknown triterpene C <sub>30</sub> H <sub>50</sub> O |
| 7    | 43.48 | lupeol*  |
| 8    | 43.52 | $\alpha$ -amyrin*                                    |

\*confirmed with commercial standard

#### Supplementary Table 4

<sup>1</sup>H (500 MHz, in CDCl<sub>3</sub>) and <sup>13</sup>C (125 MHz) chemical shifts for compound II (cf Fig 4 for structure and Supplementary Fig 5 for structure and carbon numbering)

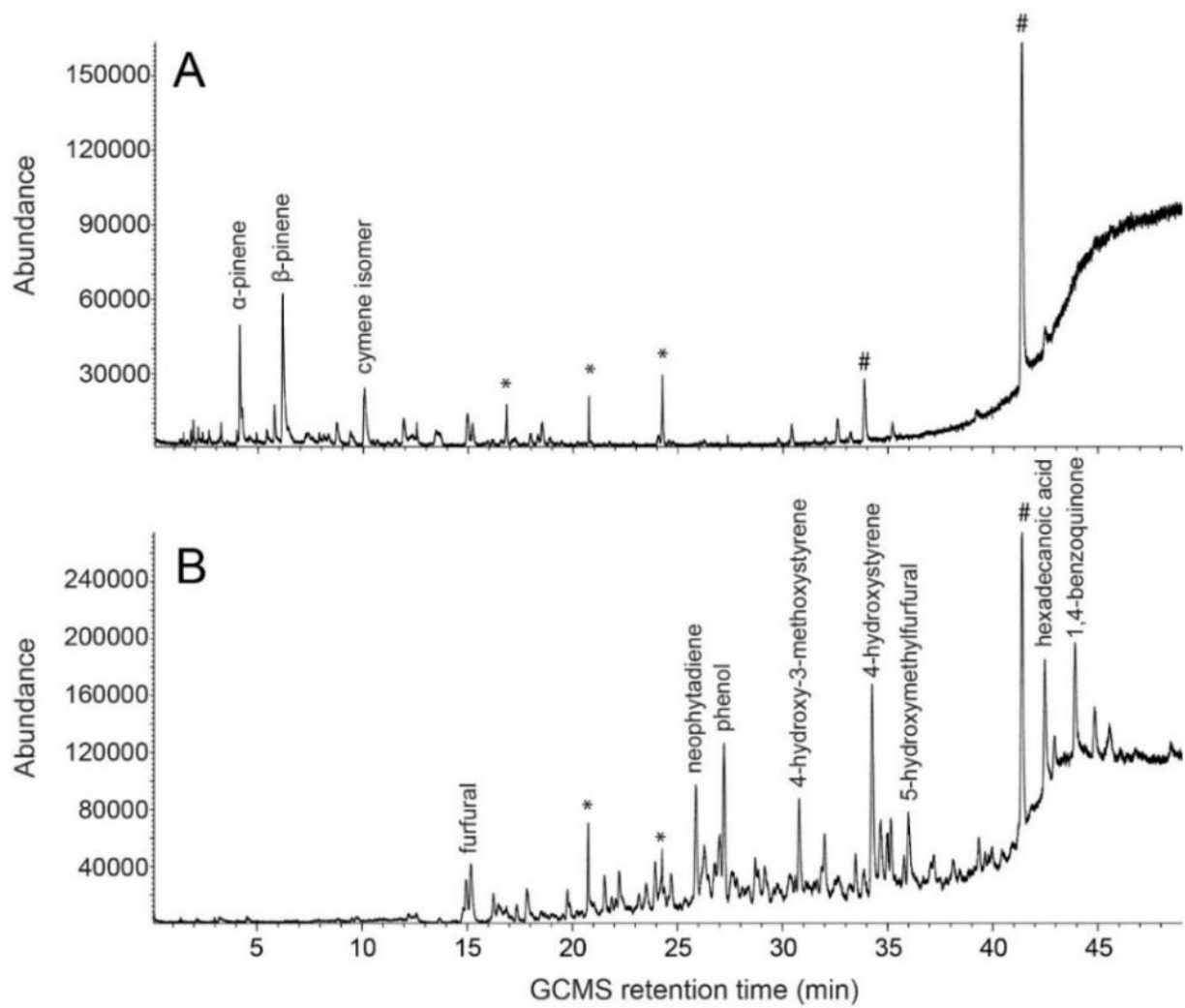
| Position          | δ <sub>C</sub> | δ <sub>H</sub> | δ <sub>H</sub> | Position                         | δ <sub>C</sub> | δ <sub>H</sub> | δ <sub>H</sub> |
|-------------------|----------------|----------------|----------------|----------------------------------|----------------|----------------|----------------|
| l <sub>1</sub>    | 62.1           | 4.30           | 4.16           | x <sub>1</sub>                   | 101.2          | 4.63           |                |
| l <sub>2</sub>    | 71.8           | 5.14           |                | x <sub>2</sub>                   | 70.6           | 4.84           |                |
| l <sub>3</sub>    | 71.2           | 5.09           |                | x <sub>3</sub>                   | 71.8           | 5.09           |                |
| l <sub>4</sub>    | 25.6           | 1.62           | 1.28           | x <sub>4</sub>                   | 69.0           | 4.90           |                |
| l <sub>5</sub>    | 28.9           | 1.50           | 1.50           | x <sub>5</sub>                   | 61.9           | 4.10           | 3.38           |
| l <sub>6</sub>    | 78.5           | 3.58           |                | r <sub>1</sub>                   | 96.8           | 4.76           |                |
| l <sub>7</sub>    | 34.5           | 1.54           | 1.44           | r <sub>2</sub>                   | 72.3           | 5.05           |                |
| l <sub>8</sub>    | 29.5           | 1.26           | 1.26           | r <sub>3</sub>                   | 74.8           | 4.00           |                |
| l <sub>9-17</sub> | 29.8           | 1.26           | 1.26           | r <sub>4</sub>                   | 72.8           | 5.03           |                |
| l <sub>18</sub>   | 32.1           | 1.25           |                | r <sub>5</sub>                   | 66.8           | 3.81           |                |
| l <sub>19</sub>   | 22.8           | 1.29           |                | r <sub>6</sub>                   | 17.4           | 1.150          |                |
| l <sub>20</sub>   | 14.3           | 0.877          |                | <b>Acetates (CO)</b> 169.4-170.8 |                |                |                |
|                   |                |                |                | <b>Acetates (Me)</b> 20.7-21.1   |                |                | 1.98-2.14      |

## Supplementary Table 5

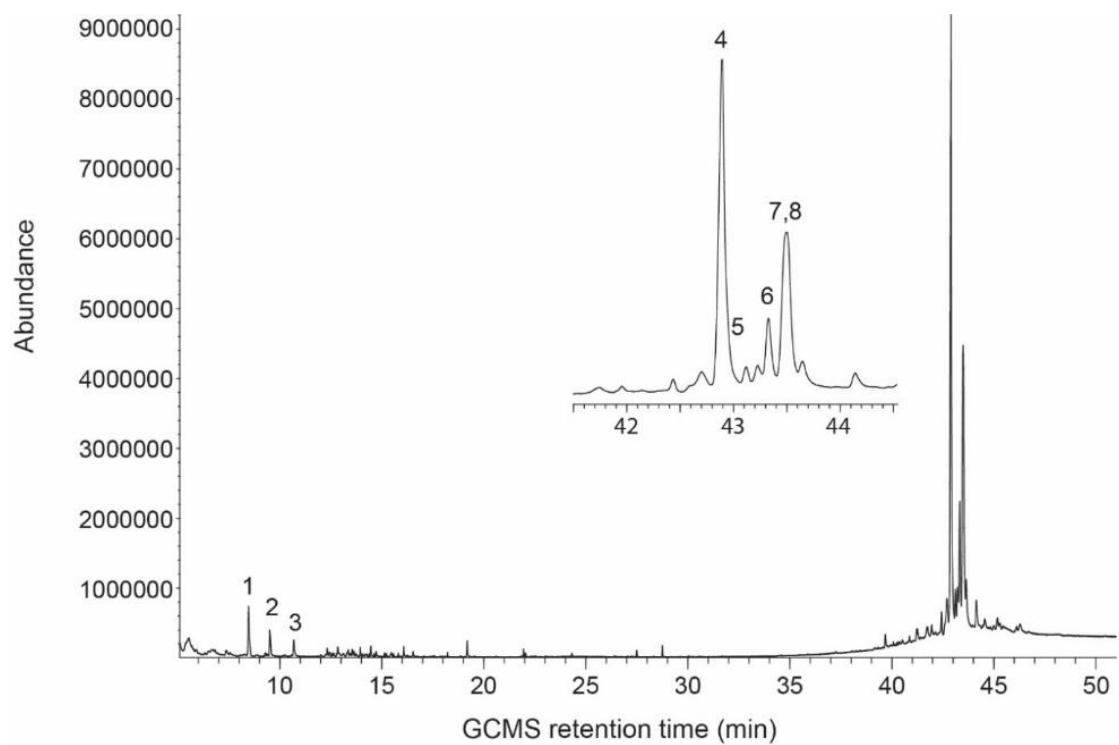
### Authors and sources in antiquity discussing Judean Balsam

| <b>Author</b>   | <b>Period</b>  | <b>Source</b>   |
|---|--|---|
| <b>Theophrastus</b>   | 4 <sup>th</sup> century BCE                                | <i>Hist. Plant.</i> 9: 6:1–4; 9:7:3   |
| <b>Diodorus Siculus,</b>  | 1 <sup>st</sup> century BCE                                | <i>Bibl. Hist.</i> 2 :48:9; 19:98   |
| <b>Strabo</b>   | 1 <sup>st</sup> century BCE<br>-1 <sup>st</sup> century CE | <i>Geogr.</i> 16:2:41;17:1:15 and 16:4:19)  |
| <b>Gnaeus Pompeius Trogus</b> (excerpted by Justin in the 2 <sup>nd</sup> century CE) | 1 <sup>st</sup> century BCE                                | <i>Epitoma Historiarum Philippicarum</i> 36:3:1–5<br><a href="https://www.attalus.org/translate/justin5.html">https://www.attalus.org/translate/justin5.html</a>  |
| <b>Dioscorides Pedanius</b>   | 1 <sup>st</sup> century CE                                 | <i>Mat. Med.</i> 1:19:1   |
| <b>Josephus</b>   | 1 <sup>st</sup> century CE                                 | <i>Flavius Josephus, War</i> 1:138, 361, <i>Ant.</i> 4:100; 14:54; 15:96, <i>Ant.</i> 8: 6: 6.  |
| <b>Pliny the Elder</b>  | 1 <sup>st</sup> century CE                                 | <i>Historia Naturalis</i> 12: 54 (25). Ed. Bostock J, (Taylor and Francis, London 1855)   |
| <b>Tacitus</b>  | 1 <sup>st</sup> century CE                                 | <i>Tacitus, Hist.</i> 5: 6: 1. (Loeb Classical Library Edition Tacitus<br><a href="https://penelope.uchicago.edu/Thayer/E/Roman/Texts/Tacitus/home.html">https://penelope.uchicago.edu/Thayer/E/Roman/Texts/Tacitus/home.html</a> |
| <b>Galen</b>  | 2 <sup>nd</sup> century CE                                 | <i>De Antidotis</i> 1.4   |
| <b>Solanus</b>  | 3 <sup>rd</sup> century CE                                 | <i>Collectanea</i> 35.5.5-6   |
| <b>Eusebius of Caesarea (Eusebius Pamphili)</b>                                       | 4 <sup>th</sup> century CE                                 | <i>Onomasticon</i> 42:1-5:  |
| <b>Saint Jerome, Hieronymus</b>   | 4-5 <sup>th</sup> century CE                               | <i>Letter 108</i> to Eustochium, 11. 5  |
| <b>Bede (Beda Venerabilis)</b>  | 7 <sup>th</sup> -8 <sup>th</sup> century CE                | <i>Loc. Sanct.</i> 9.3/313  |
| <b>St Willibald</b>   | 8 <sup>th</sup> century CE                                 | <i>Hodeporicon</i> : Transl: Rev Canon Brownlow, (Palestine Pilgrims Text Society 1891)   |
| <b>Talmud*</b>  | 3 <sup>rd</sup> -5 <sup>th</sup> century CE                | Jerusalem Talmud: <i>Yoma</i> 4:5; Tractate Shabbat 25b, 26a  |
| <b>Talmud*</b>  | 3 <sup>rd</sup> -6 <sup>th</sup> century CE                | Babylonian Talmud <i>Kritut</i> 6a,   |

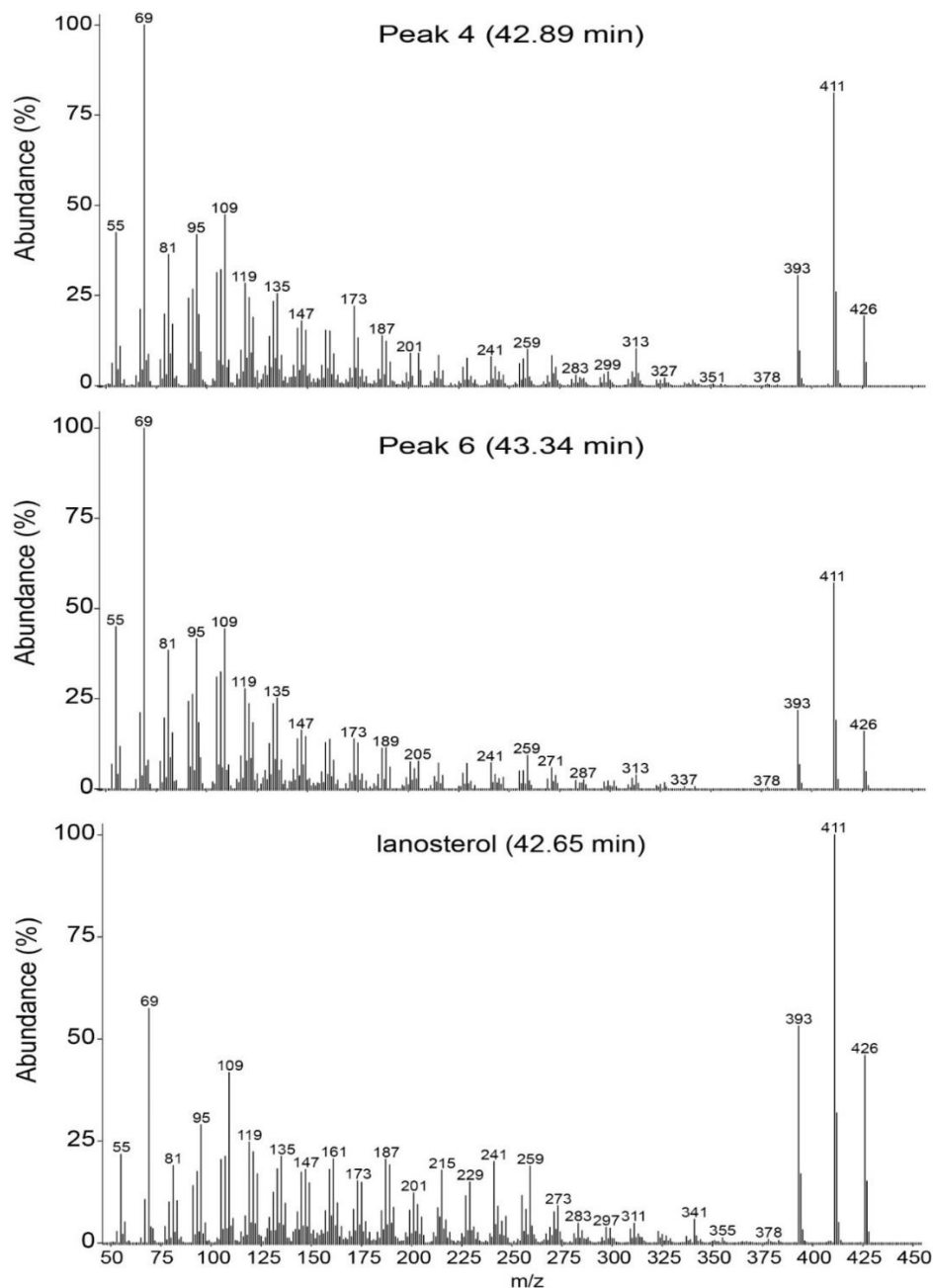
\* Referring to Biblical “*tsori*”



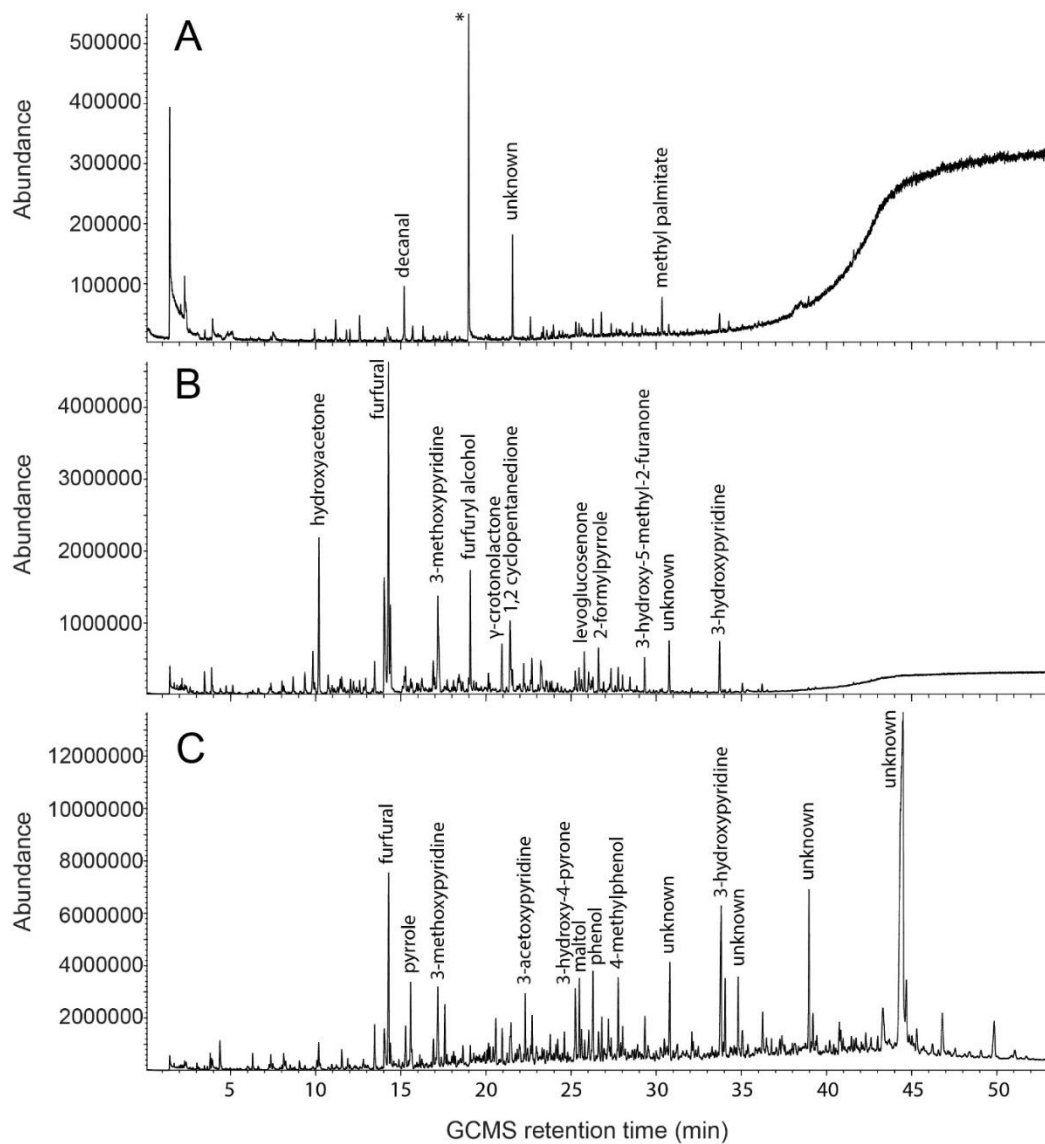
**Supplementary Fig 1:** Comparison of volatile compounds by SPME/GC-MS analysis from “Sheba” plant material (leaves and stems).



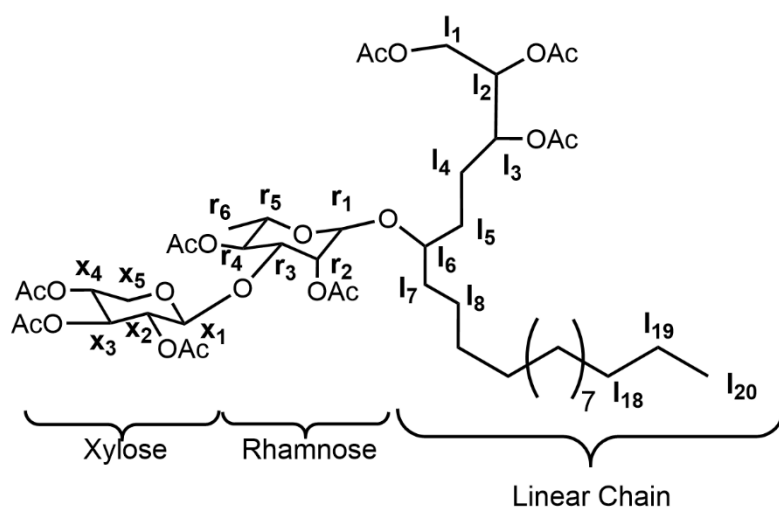
**Supplementary Fig 2:** Analysis of the hexanes extract of “Sheba” resin by GC-MS. Peaks marked with numbers correspond with identified compounds in **Supplementary Table 2**.



**Supplementary Fig. 3:** Mass spectra of the two unknown triterpenoids from “Sheba” resin (corresponding to **Supplementary Fig 2** and **Supplementary Table 2**) compared with lanosterol analysed under identical GC-MS conditions.



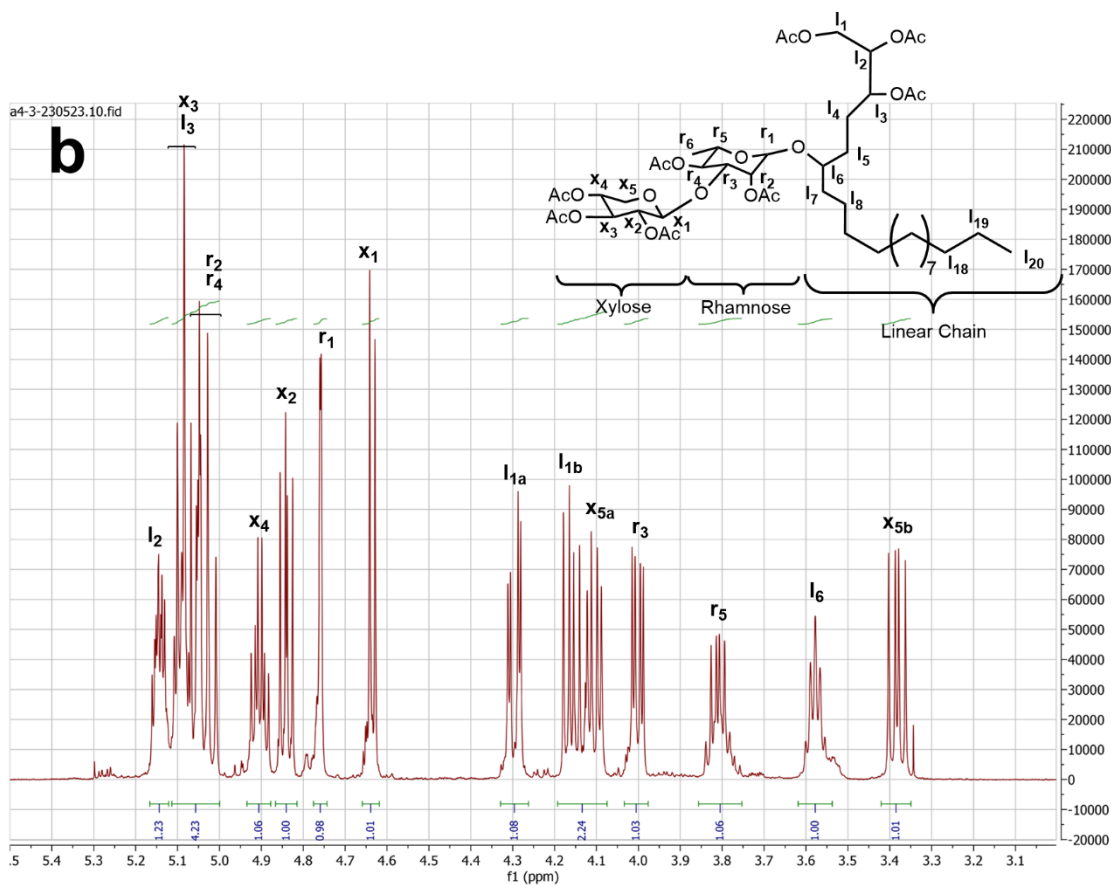
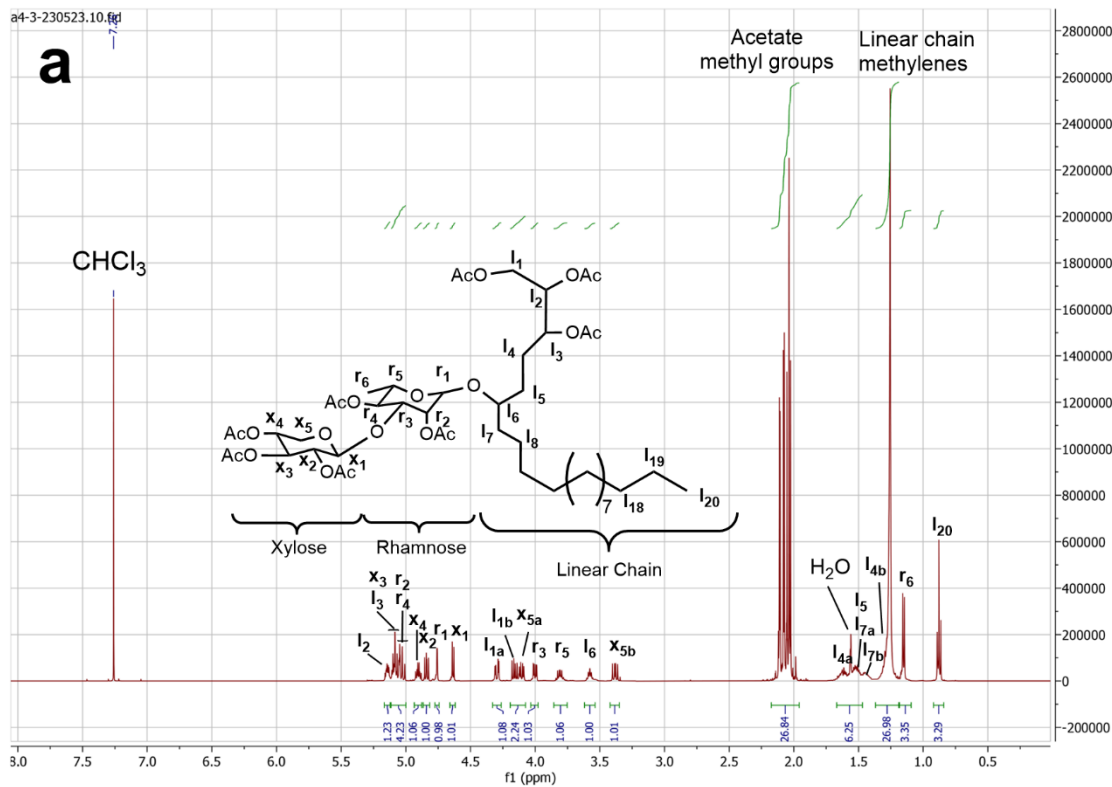
**Supplementary Fig 4:** Comparison of volatiles emitted from heating “Sheba” resin for increasing time and resulting volatile compounds trapped by SPME. **A.** 1 min, low heat. **B** 2 min, medium heat. **C** 5 min, high heat. \*siloxane impurity.



II

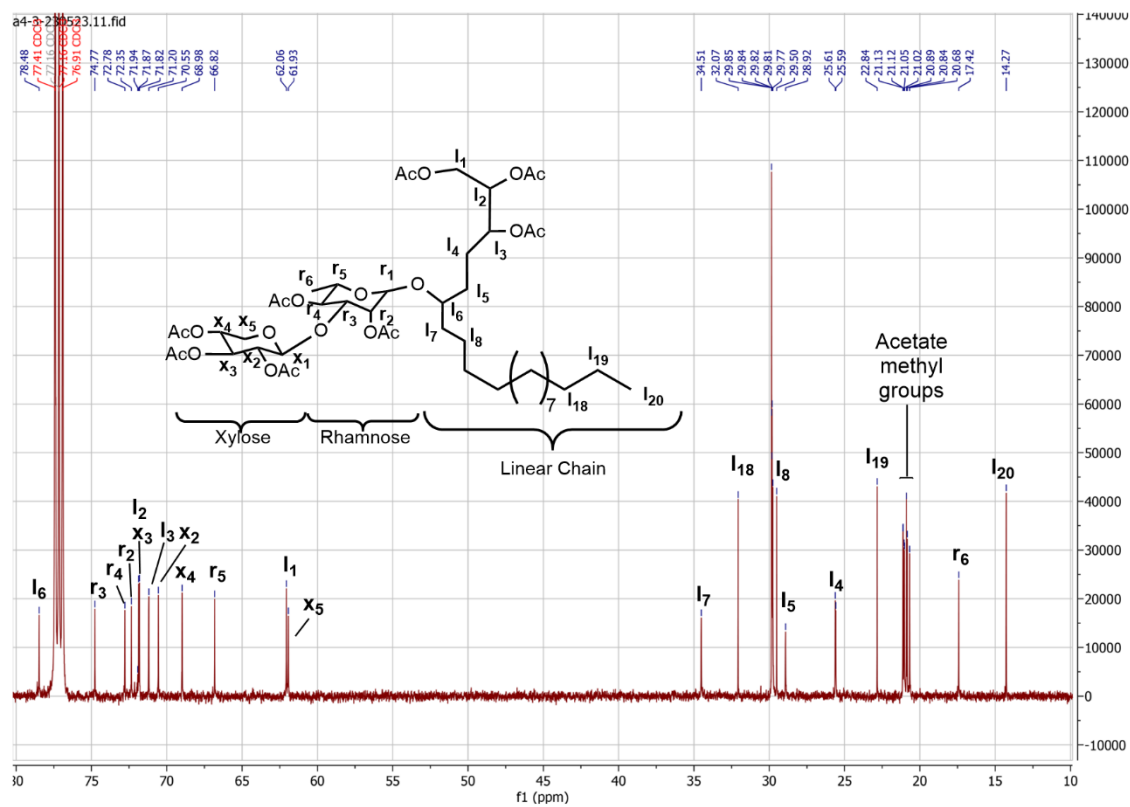
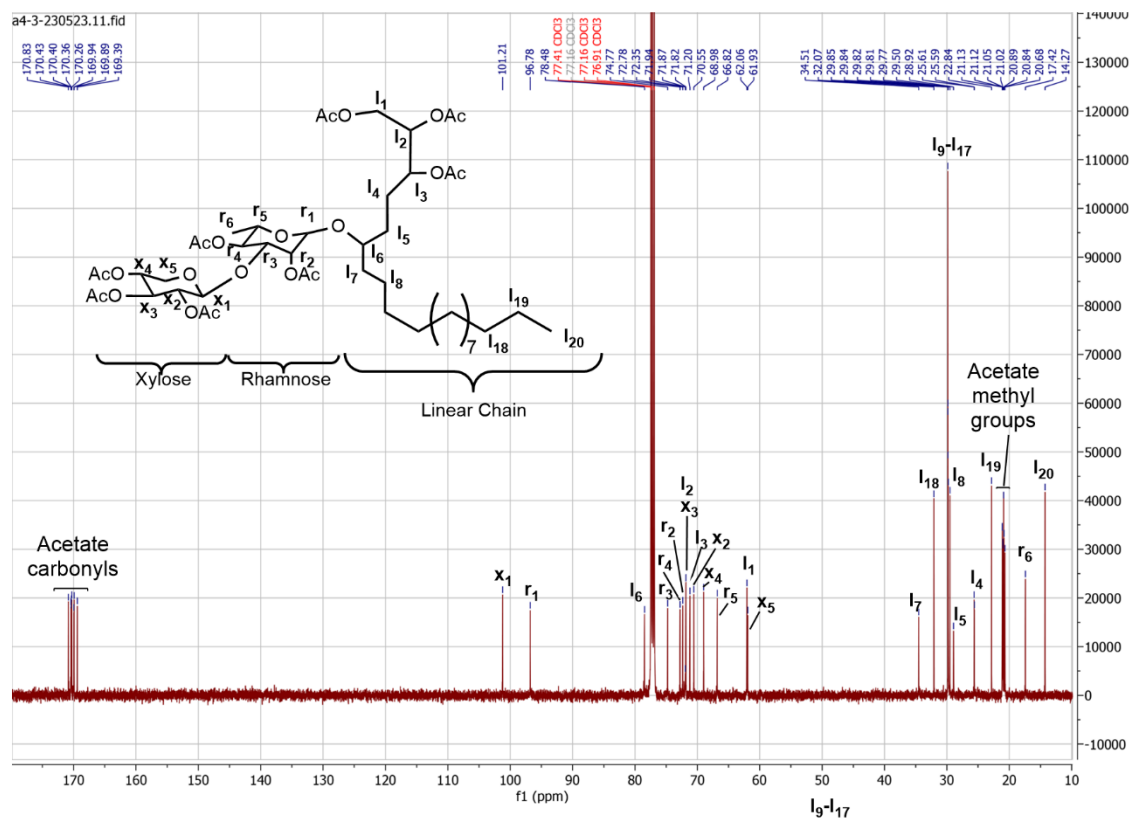
**Supplementary Fig 5:** Structure of compound **II** isolated from “Sheba” resin (cf **Fig. 4**) and identified using Nuclear Magnetic Resonance and High Resolution Mass Spectrometry.



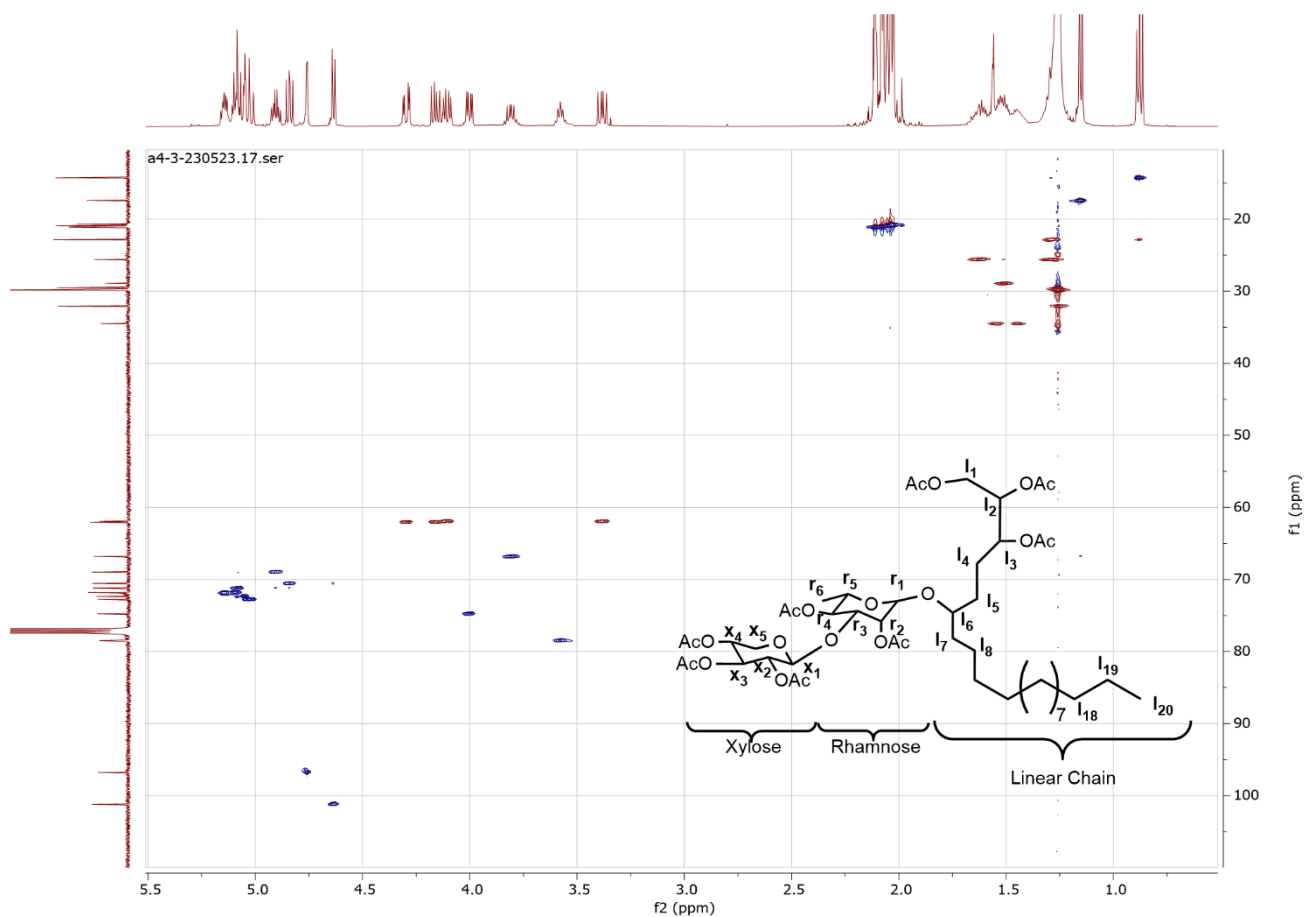


**Supplementary Fig 6:** <sup>1</sup>H-NMR spectrum (500 MHz, CDCl<sub>3</sub>) of compound **II** (a) 0.0-8.0 ppm range;

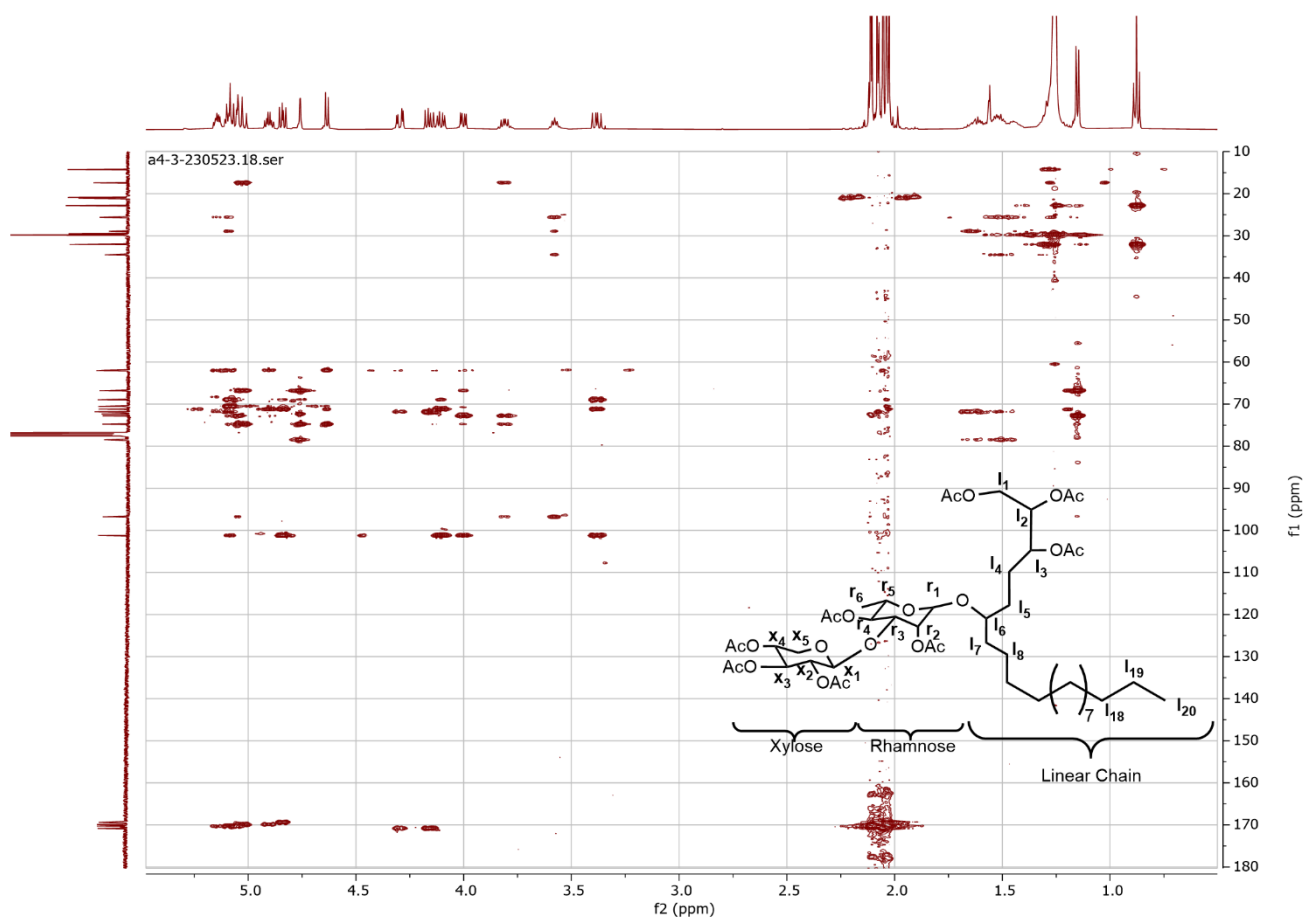
(b) 3.0-5.5 ppm range.



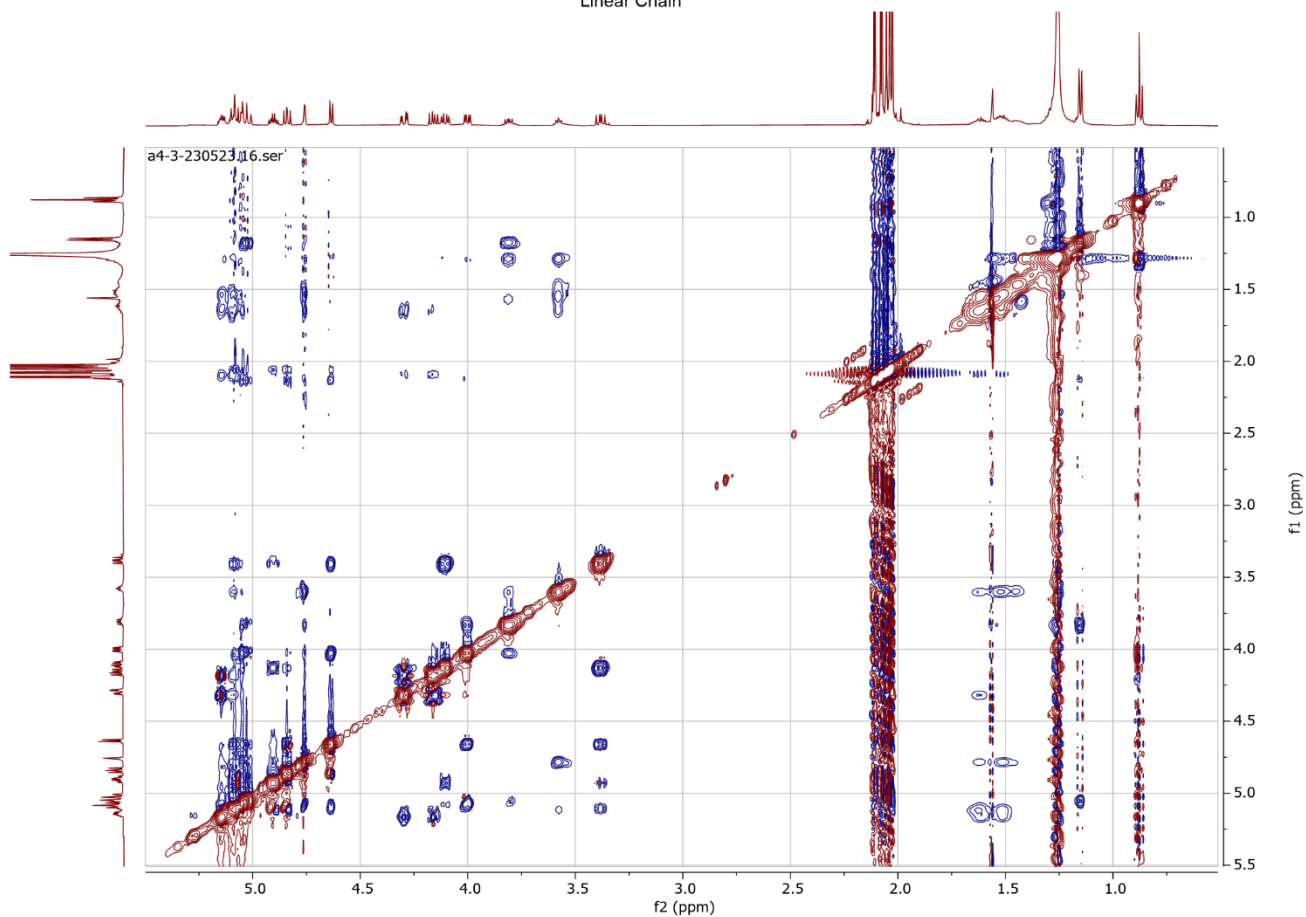
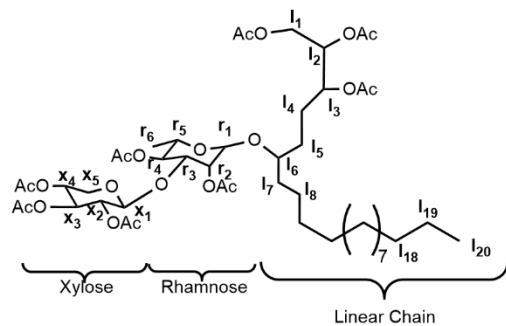
**Supplementary Fig 7:**  $^{13}\text{C}$ -NMR spectrum (125 MHz,  $\text{CDCl}_3$ ) of compound **II** (a) 10-190 ppm range; (b) 10-80 ppm range.



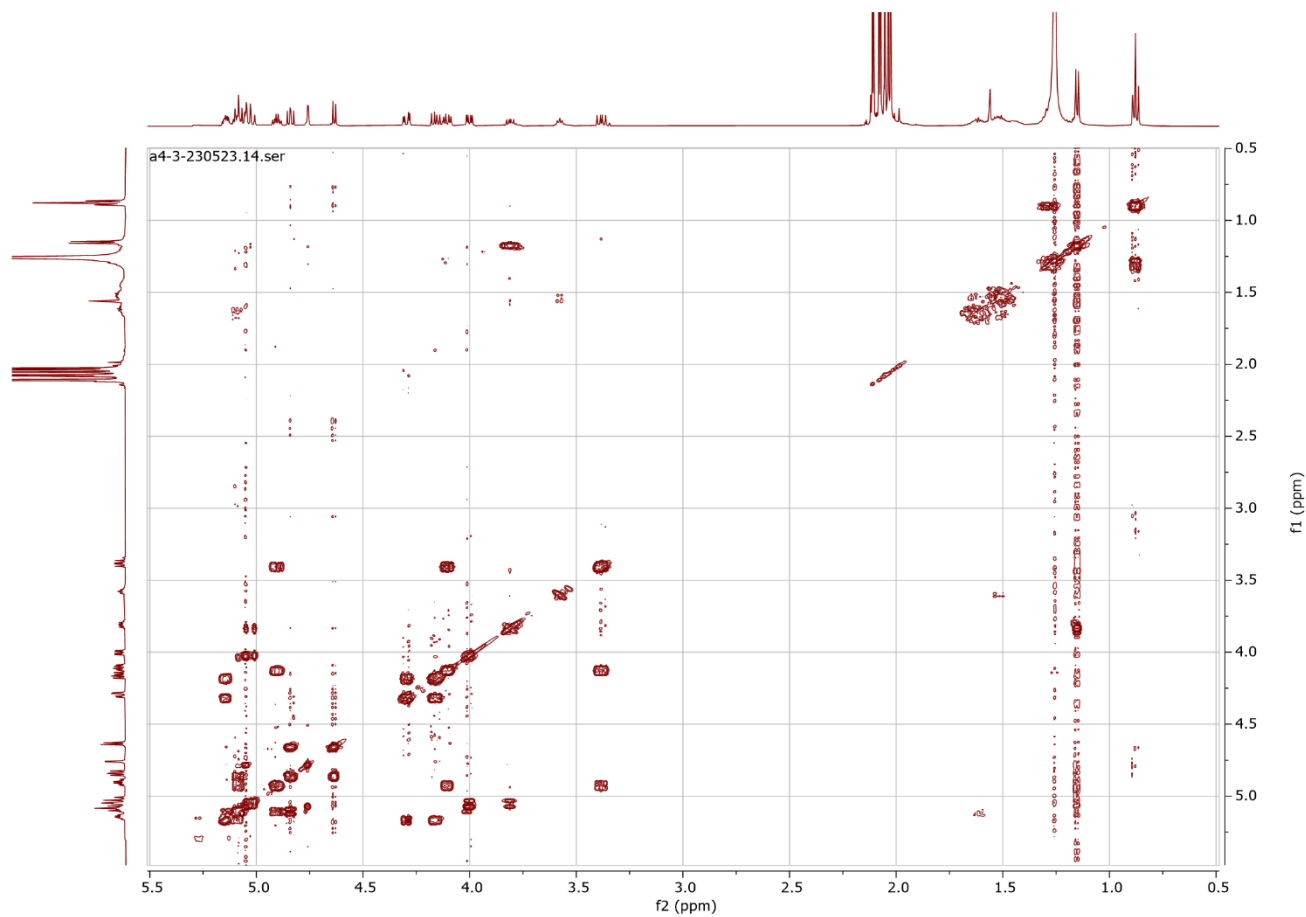
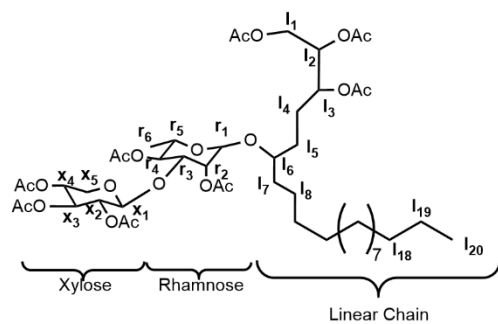
**Supplementary Fig 8:**  $^1\text{H}$ - $^{13}\text{C}$  one bond ( $^1J$ ) correlation pattern (HSQC, 500 MHz,  $\text{CDCl}_3$ ) for compound II ( $^1\text{H}$ : 0.5-5.5 ppm range/  $^{13}\text{C}$ : 10-110 ppm range).



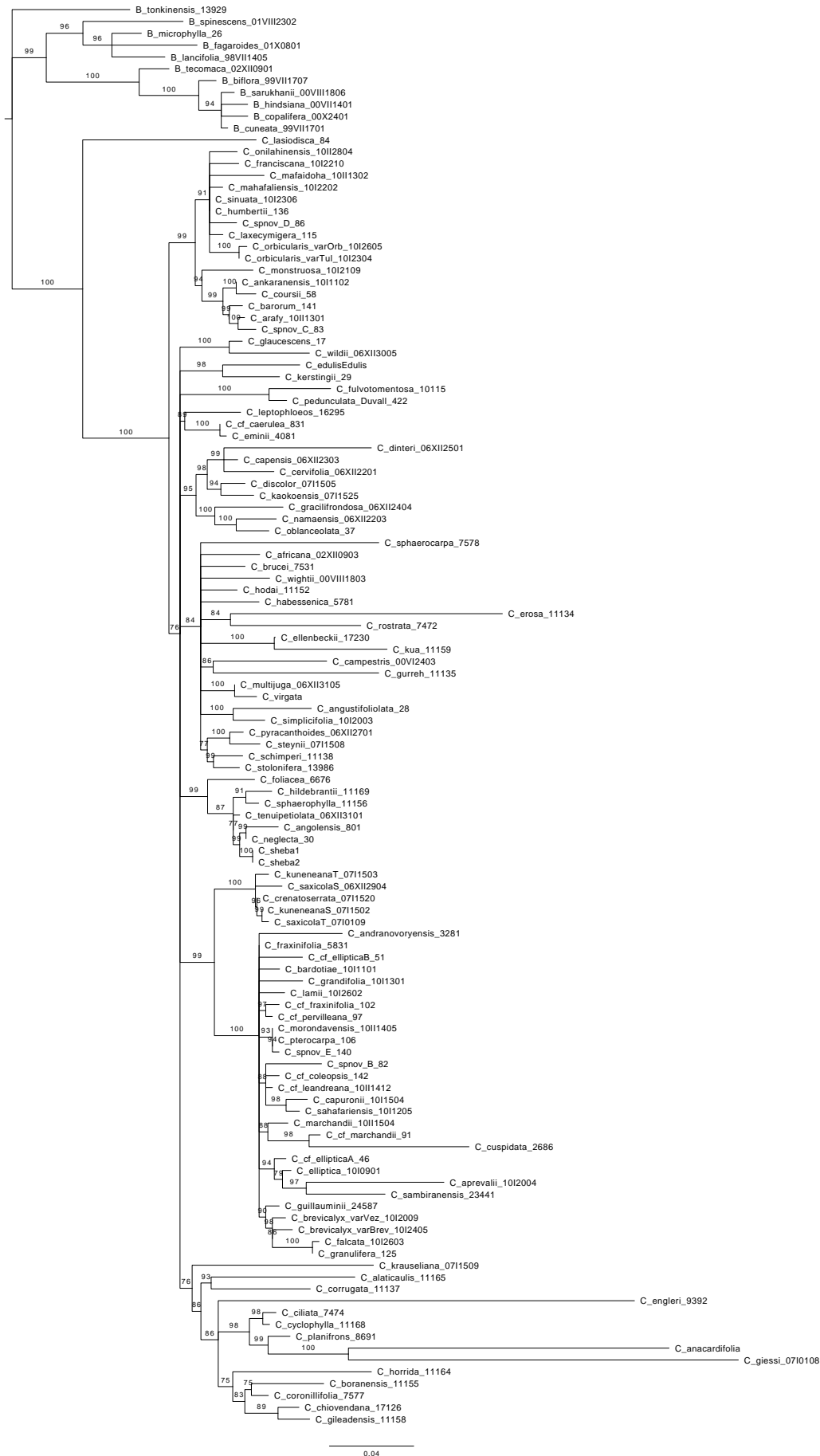
**Supplementary Fig 9:** <sup>1</sup>H-<sup>13</sup>C long range (<sup>2,3</sup>J) correlation pattern (HMBC, 500 MHz, CDCl<sub>3</sub>) for compound II. <sup>1</sup>H: 0.5-5.5 ppm range/ <sup>13</sup>C: 10-180 ppm range



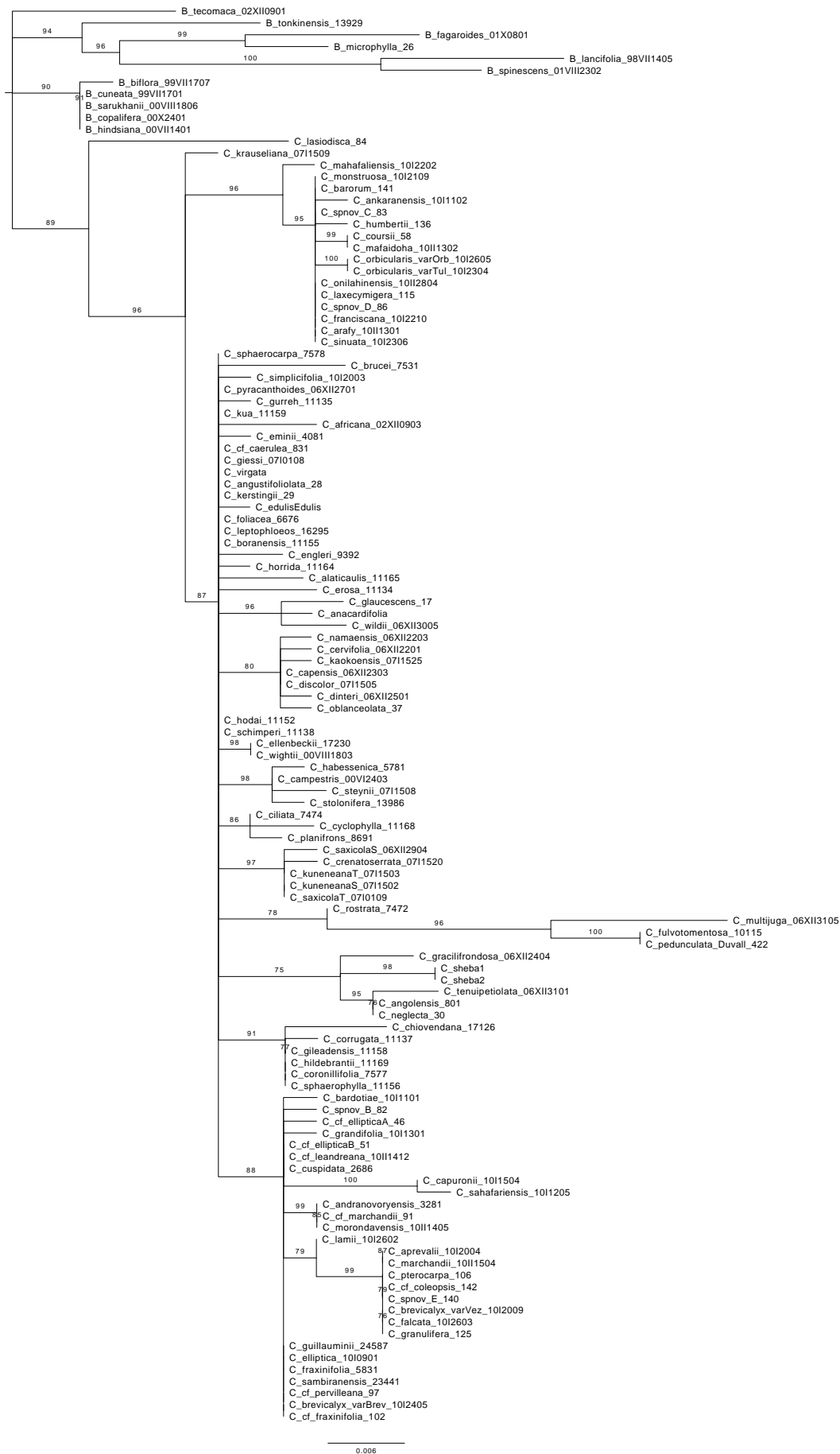
**Supplementary Fig 10:**  $^1\text{H}$ - $^1\text{H}$  NOESY correlation pattern (500 MHz,  $\text{CDCl}_3$ ) for compound **II** (0.5-5.5 ppm range).



**Supplementary Fig 11:** <sup>1</sup>H-<sup>1</sup>H COSY correlation pattern (500 MHz, CDCl<sub>3</sub>) for compound **II** (0.5-5.5 ppm range).

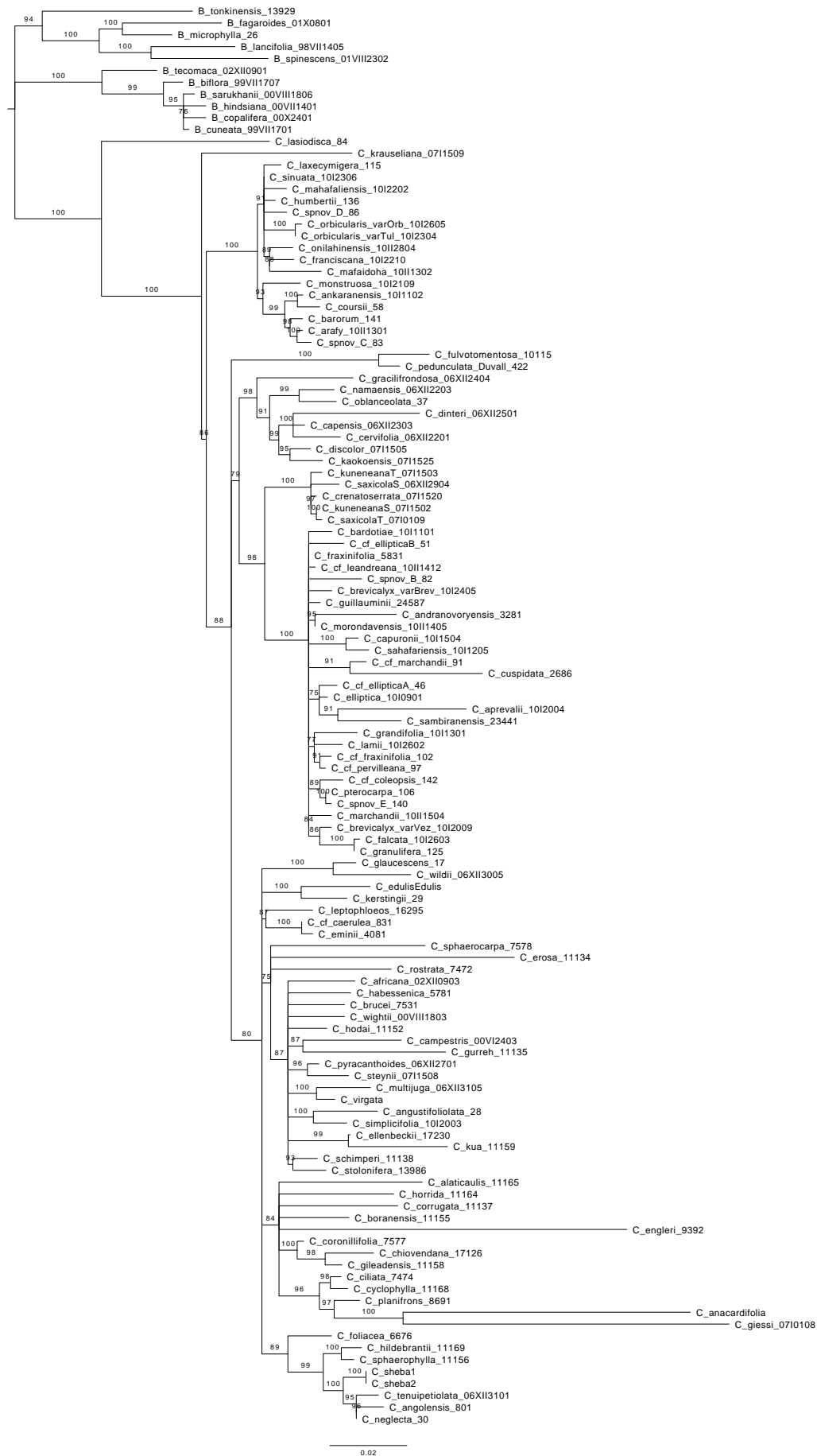


**Supplementary Fig 12:** Phylogeny of *Commiphora* based on maximum likelihood analysis of nuclear DNA sequence data. Tree topology is the 75% majority rule consensus phylogram of 1000 ultrafast bootstrap replicate trees.



**Supplementary Fig 13:** Phylogeny of *Commiphora* based on maximum likelihood analysis of chloroplast DNA sequence data. Tree topology is the 75% majority rule consensus phylogram of 1000 ultrafast bootstrap replicate trees.





**Supplementary Fig 14:** Phylogeny of *Commiphora* based on maximum likelihood analysis of combined nuclear and chloroplast DNA sequence data. Tree topology is the 75% majority rule consensus phylogram of 1000 ultrafast bootstrap replicate trees.

## Supplementary References

1. Bronk Ramsey, C. Development of the radiocarbon calibration program. Radiocarbon 43, 355-363 (2001) DOI: <https://doi.org/10.1017/S0033822200038212>
2. Bronk Ramsey, C. Bayesian analysis of radiocarbon dates. Radiocarbon 51, 337-360 (2009) DOI: <https://doi.org/10.1017/S0033822200033865>
3. Reimer, P. J. et al. The IntCal20 Northern Hemisphere radiocarbon age calibration curve (0–55cal kBP). Radiocarbon. 62, 4, 725–757 (2020). DOI: [10.1017/RDC.2020.41](https://doi.org/10.1017/RDC.2020.41)