

## Supporting information

# An in-depth stability study of the essential oils from *Mentha x piperita*, *M. spicata*, *Origanum vulgare*, *Thymus vulgaris*: the impact of thermal and storage conditions.

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## 1. Type of containers used for the stability study

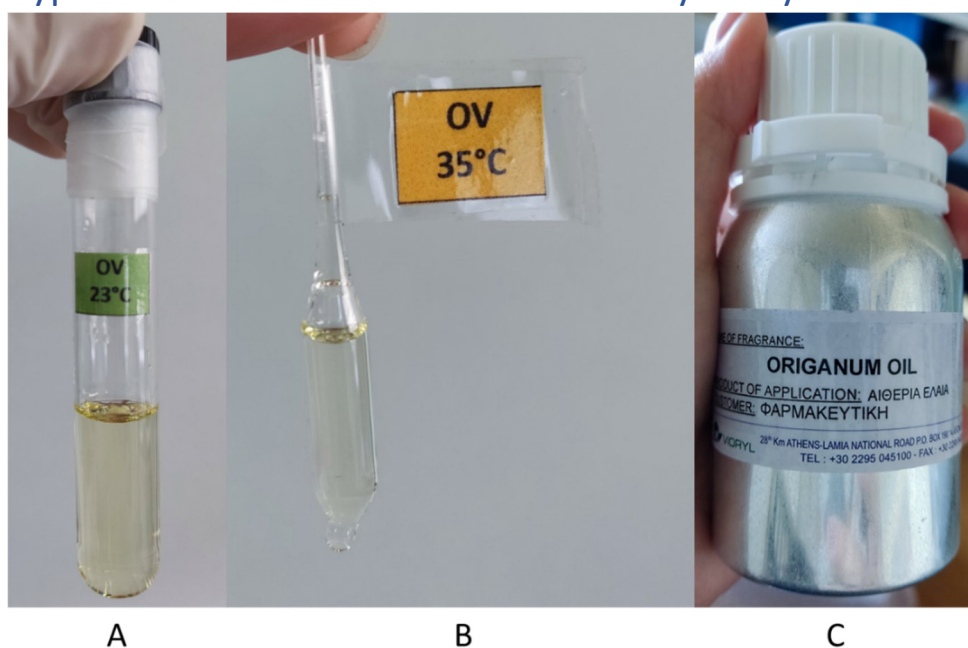


Figure 1 The three types of containers used in the stability study: A. glass tubes sealed with cap B. glass sealed ampoule and C. metal container

## 2. Photo documentation of selected essential oils

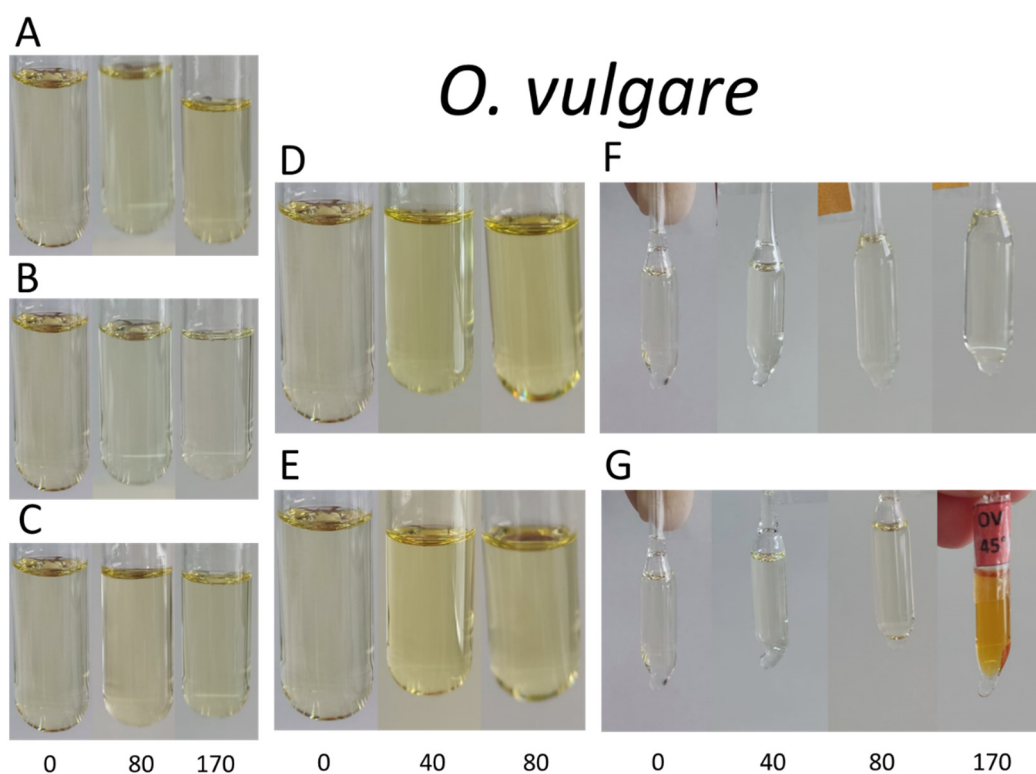


Figure 2 : Photo documentation on different days (0, 40, 80, 170) of *O. vulgare* after storage in various conditions: A. at room temperature in glass tubes sealed with cap; B. in direct sunlight exposure in glass tubes sealed with cap; C. at 4 °C in glass tubes sealed with cap; D. at 35 °C in glass tubes sealed with cap; E. at 45 °C in glass tubes sealed with cap; F. at 35 °C in sealed glass ampoules; G. at 45 °C in sealed glass ampoules

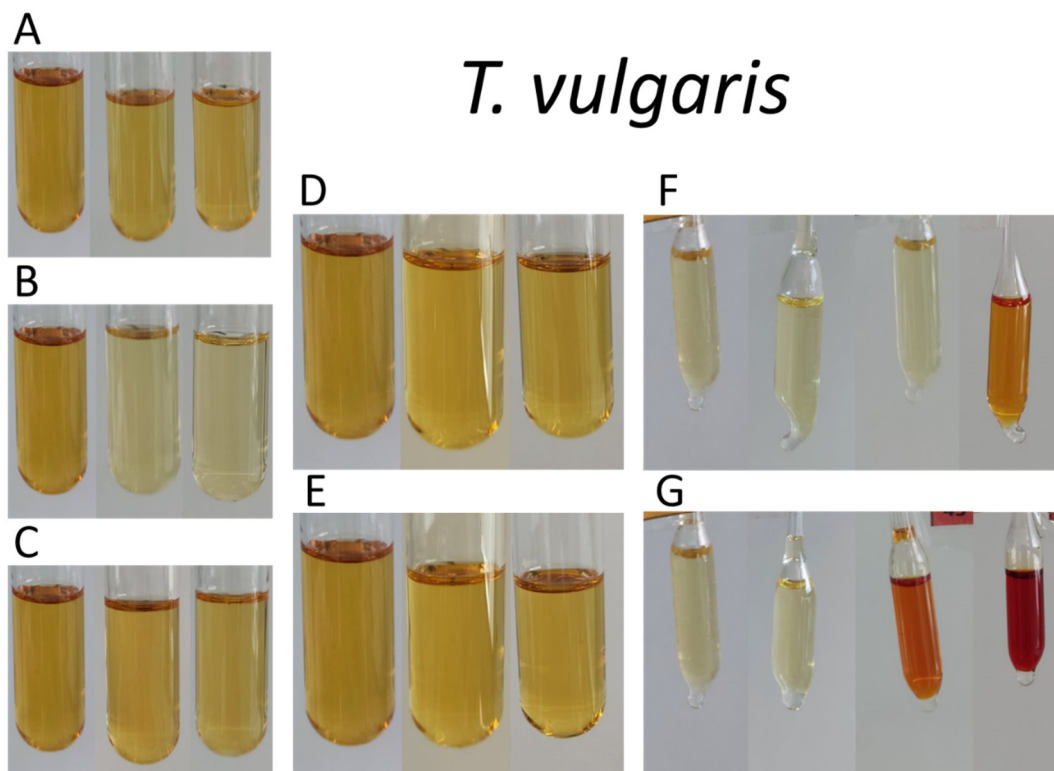


Figure 3: Photo documentation on different days (0, 40, 80, 170) of *T. vulgaris* after storage in various conditions: A. at room temperature in glass tubes sealed with cap; B. in direct sunlight exposure in glass tubes sealed with cap; C. at 4 °C in glass tubes sealed with cap; D. at 35 °C in glass tubes sealed with cap; E. at 45 °C in glass tubes sealed with cap; F. at 35 °C in sealed glass ampoules; G. at 45 °C in sealed glass ampoules

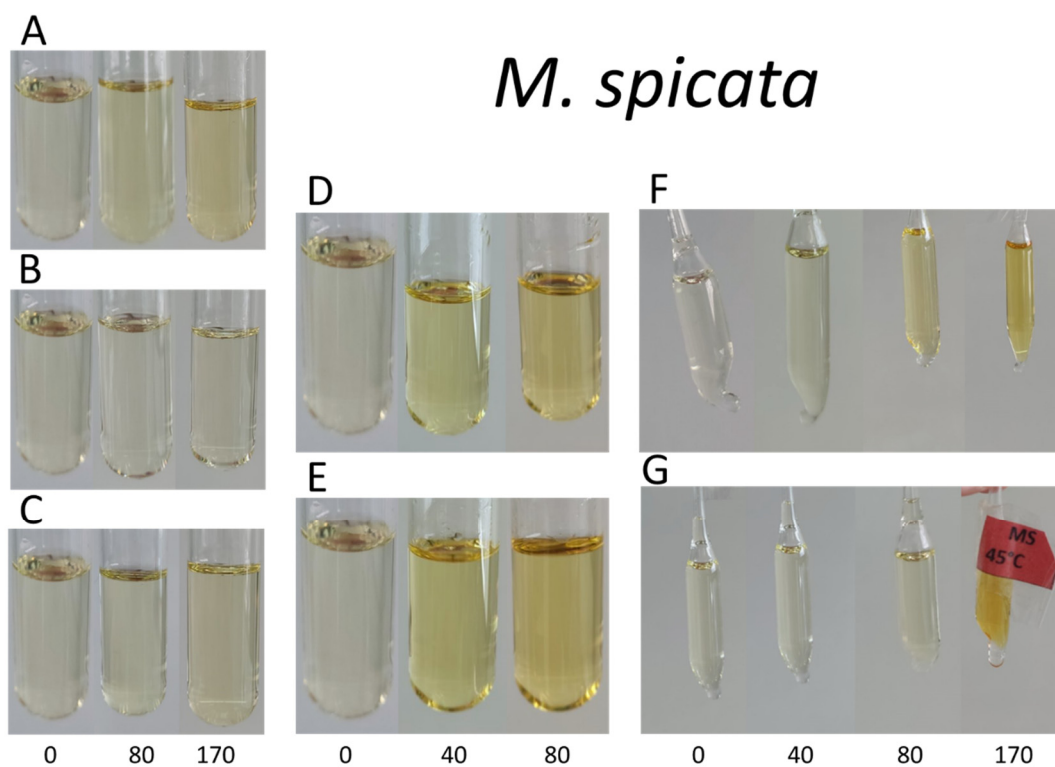


Figure 4: Photo documentation on different days (0, 40, 80, 170) of *M. spicata* after storage in various conditions: A. at room temperature in glass tubes sealed with cap; B. in direct sunlight exposure in glass tubes sealed with cap;

C. at 4 °C in glass tubes sealed with cap; D. at 35 °C in glass tubes sealed with cap; E. at 45 °C in glass tubes sealed with cap; F. at 35 °C in sealed glass ampoules; G. at 45 °C in sealed glass ampoules

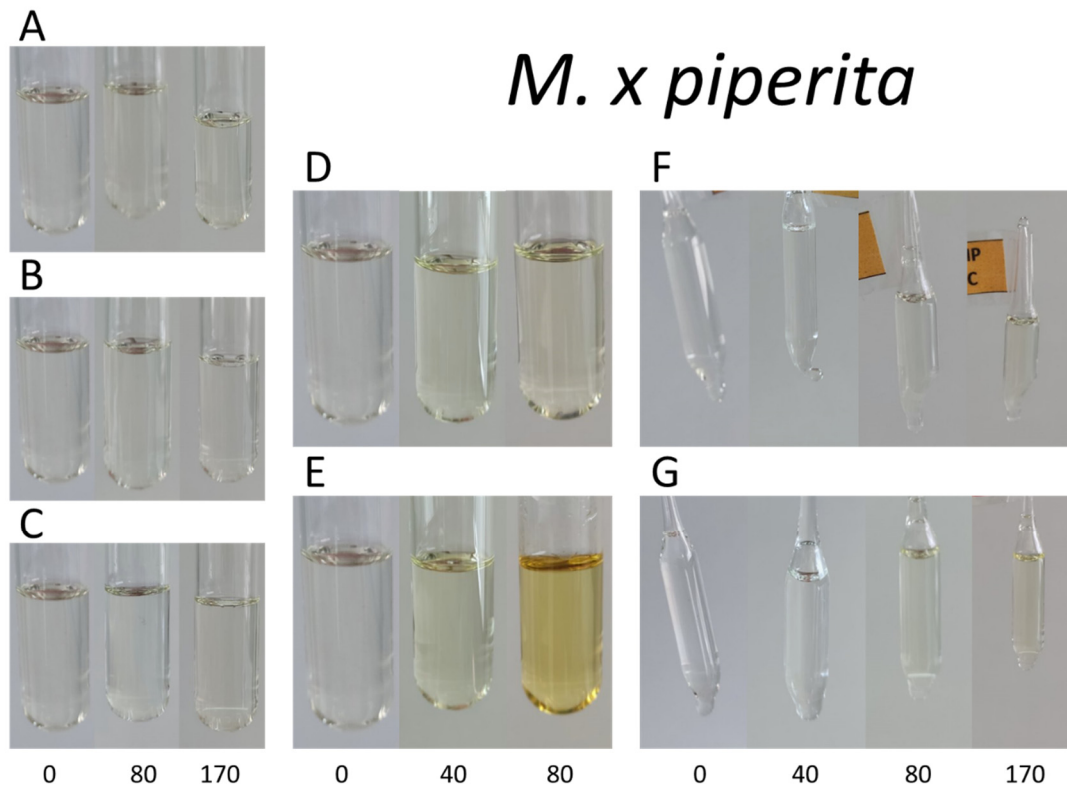


Figure 5: Photo documentation on different days (0, 40, 80, 170) of *M. x piperita* after storage in various conditions: A. at room temperature in glass tubes sealed with cap; B. in direct sunlight exposure in glass tubes sealed with cap; C. at 4 °C in glass tubes sealed with cap; D. at 35 °C in glass tubes sealed with cap; E. at 45 °C in glass tubes sealed with cap; F. at 35 °C in sealed glass ampoules; G. at 45 °C in sealed glass ampoules

### 3. GC-MS chromatograms of the *Origanum vulgare* L. essential oil

#### 3.1. GC-MS chromatogram of the initial *O. vulgare* essential oil

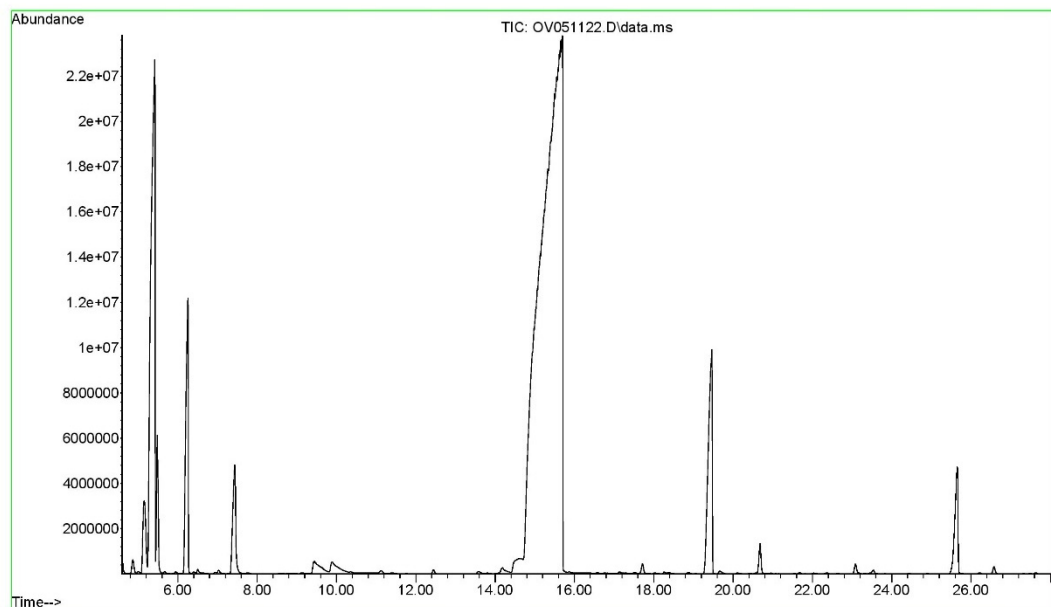


Figure 6 GC-MS chromatogram of *O. vulgare* before storage

#### 3.2. GC-MS chromatograms of the *O. vulgare* essential oil during storage in glass tubes sealed with cap at room temperature (23 °C) under darkness for 6 months

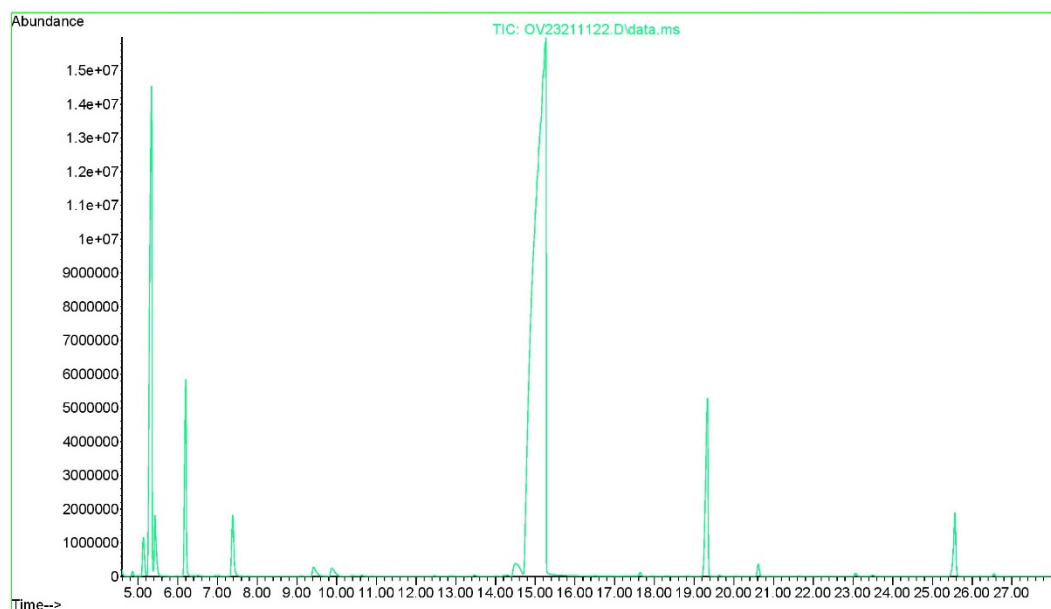


Figure 7. GC-MS chromatogram of *O. vulgare* after 10 days of storage

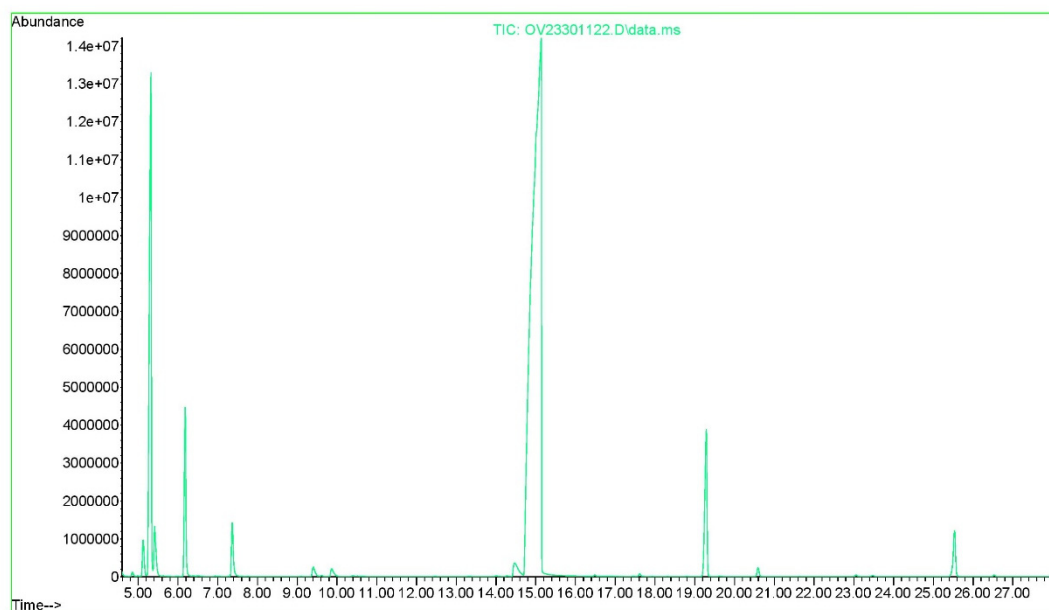


Figure 8 GC-MS chromatogram of *O. vulgare* after 20 days of storage

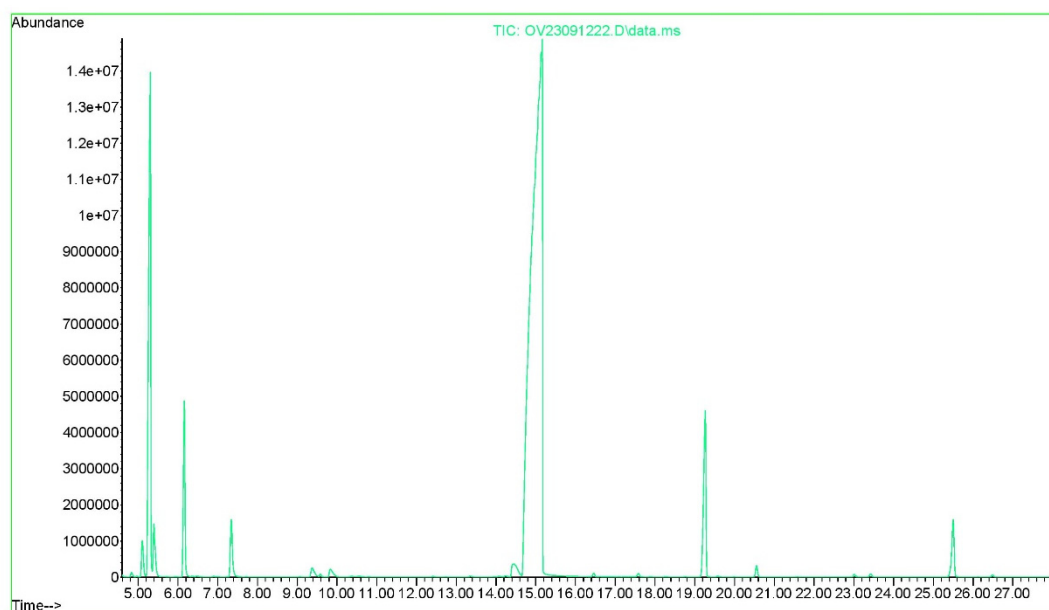


Figure 9 GC-MS chromatogram of *O. vulgare* after 30 days of storage

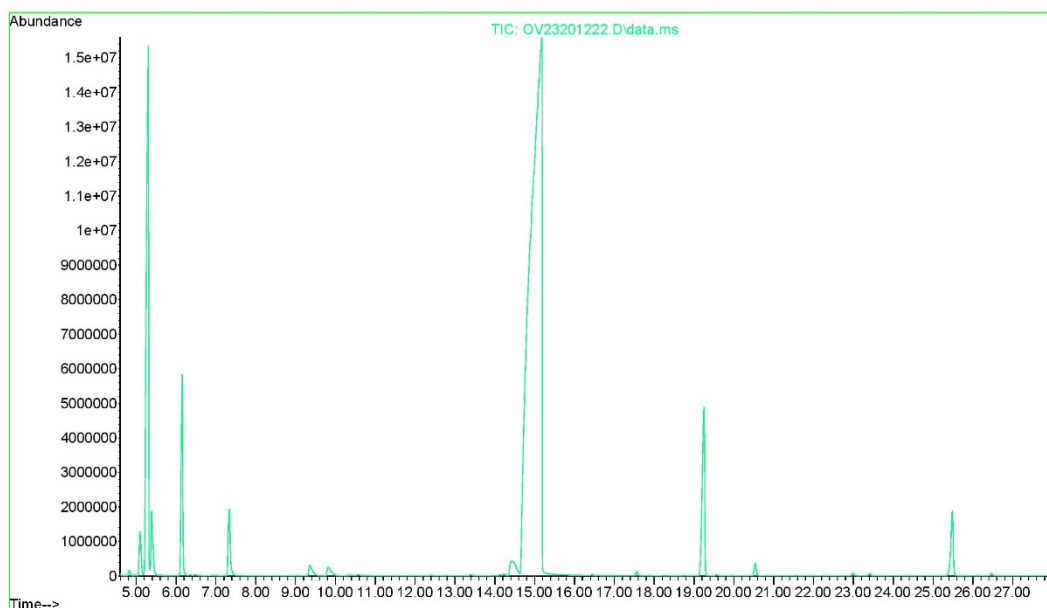


Figure 10 GC-MS chromatogram of *O. vulgare* after 40 days of storage

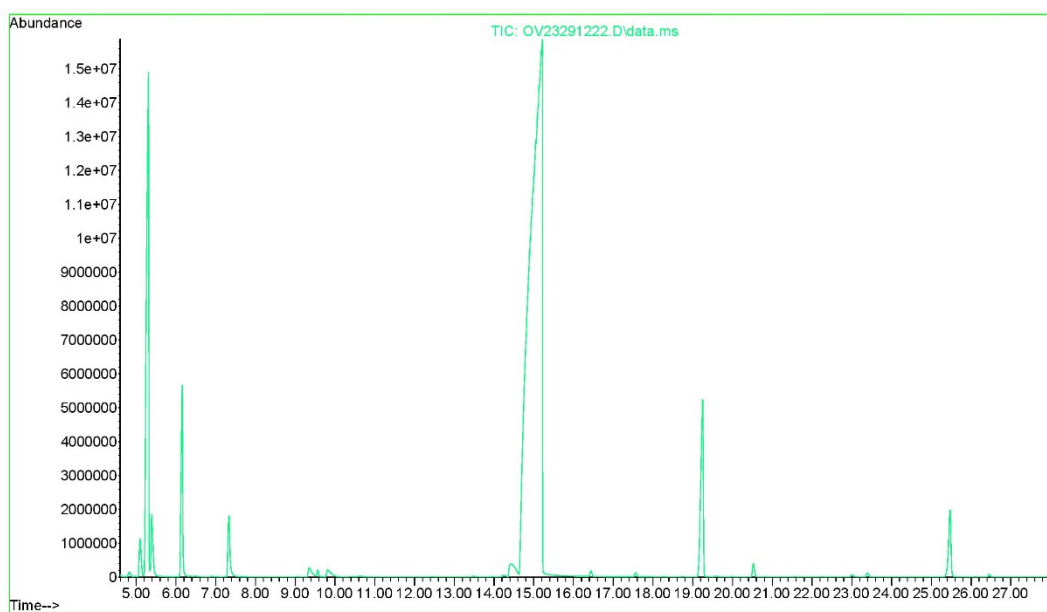


Figure 11 GC-MS chromatogram of *O. vulgare* after 50 days of storage

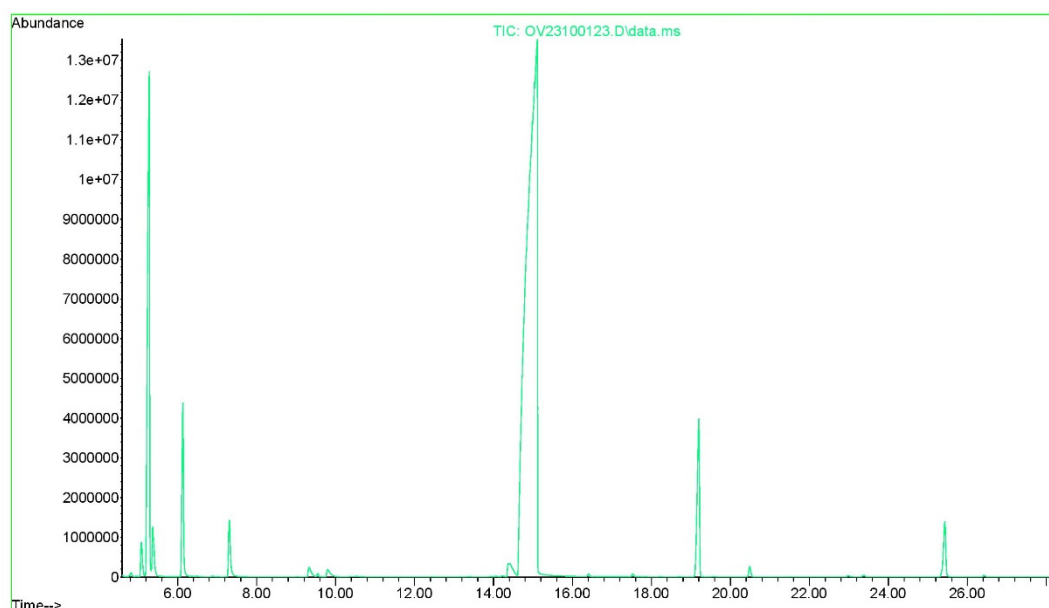


Figure 12 GC-MS chromatogram of *O. vulgare* after 60 days of storage

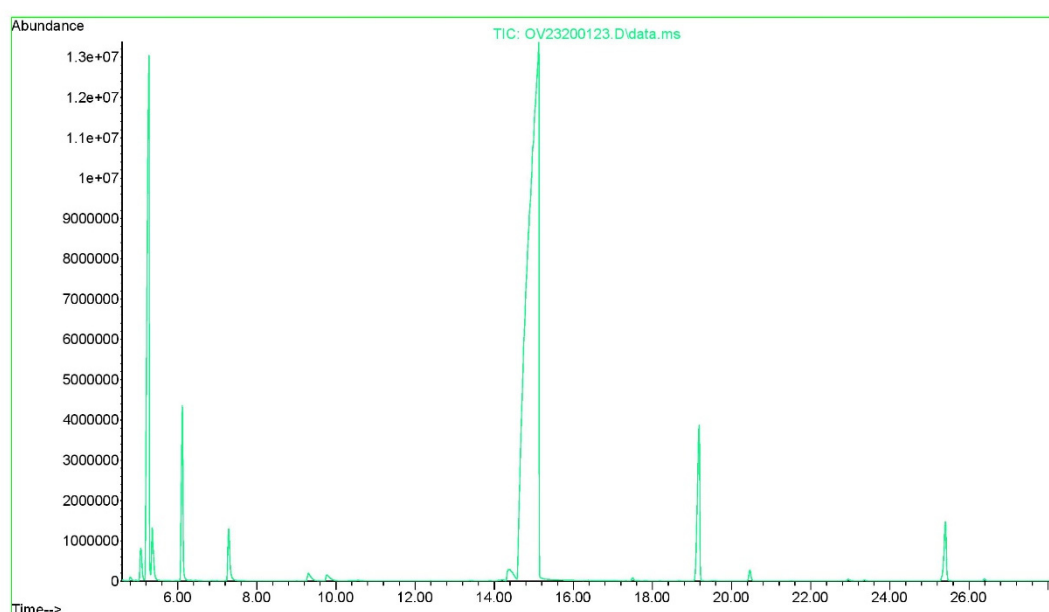


Figure 13 GC-MS chromatogram of *O. vulgare* after 70 days of storage

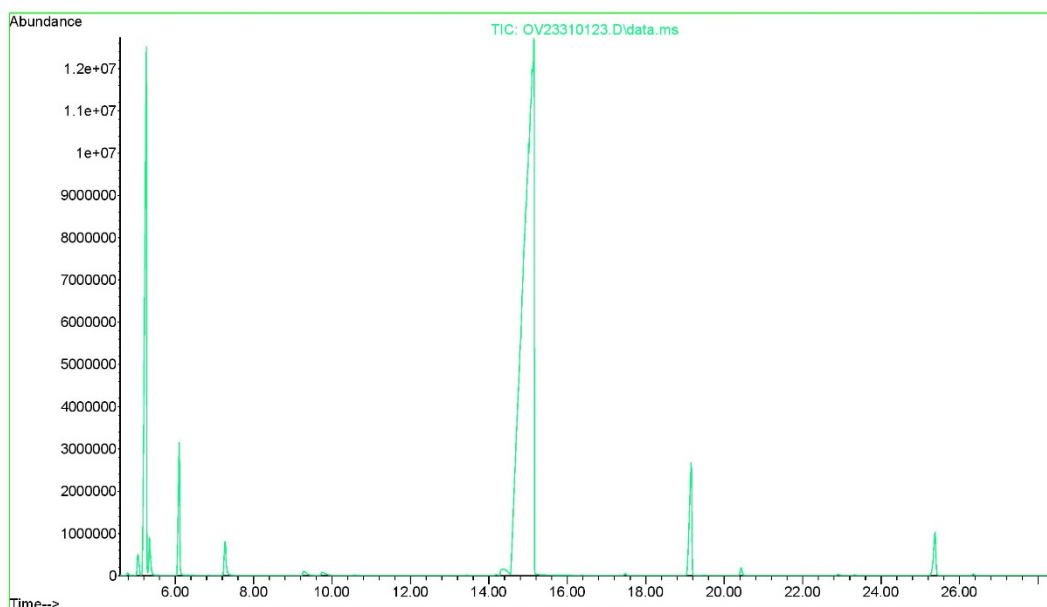


Figure 14 GC-MS chromatogram of *O. vulgare* after 80 days of storage

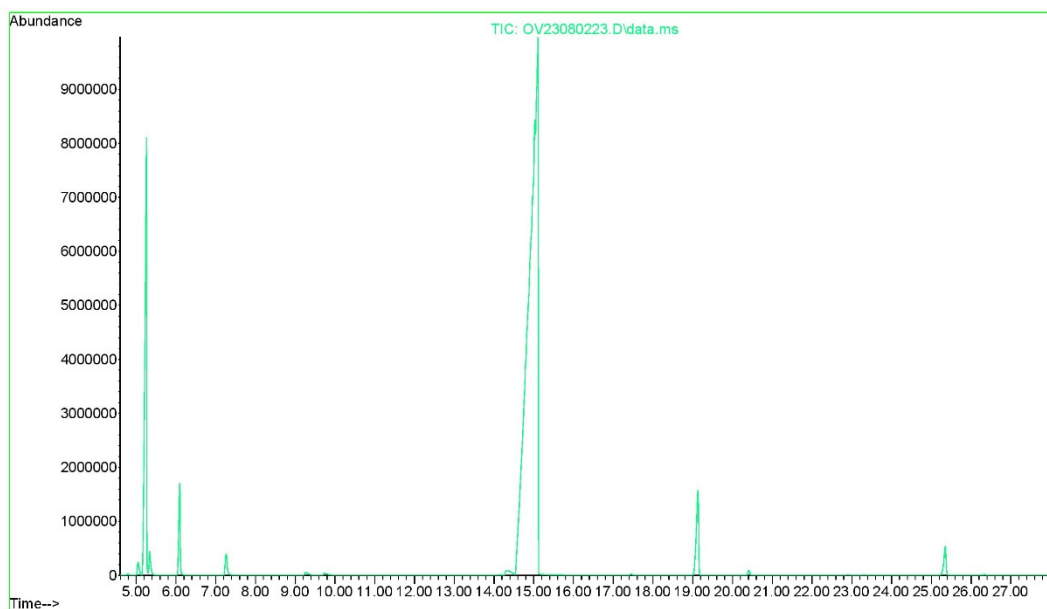


Figure 15 GC-MS chromatogram of *O. vulgare* after 90 days of storage

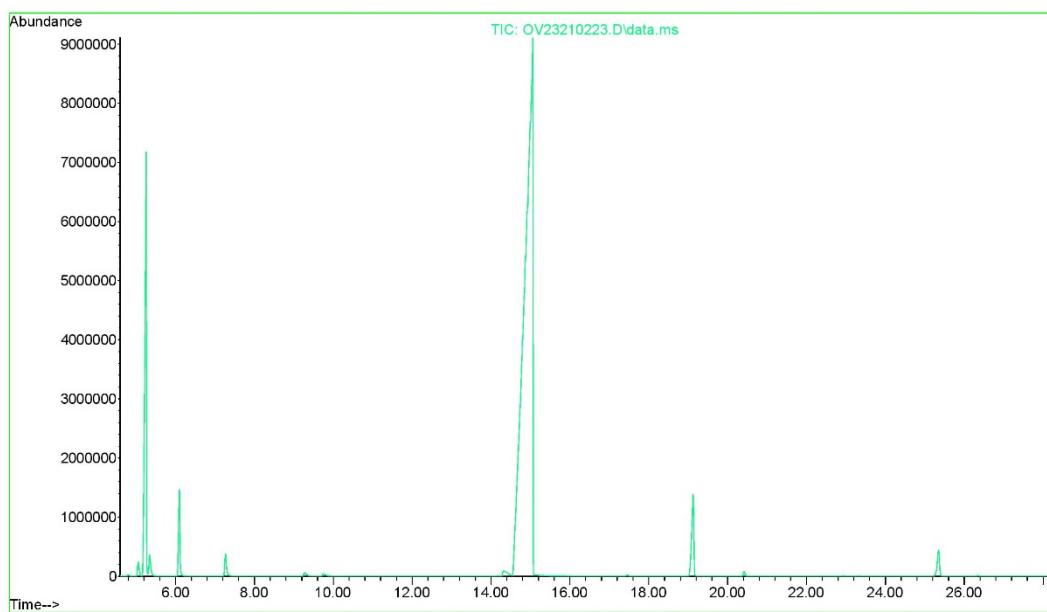


Figure 16 GC-MS chromatogram of *O. vulgare* after 100 days of storage

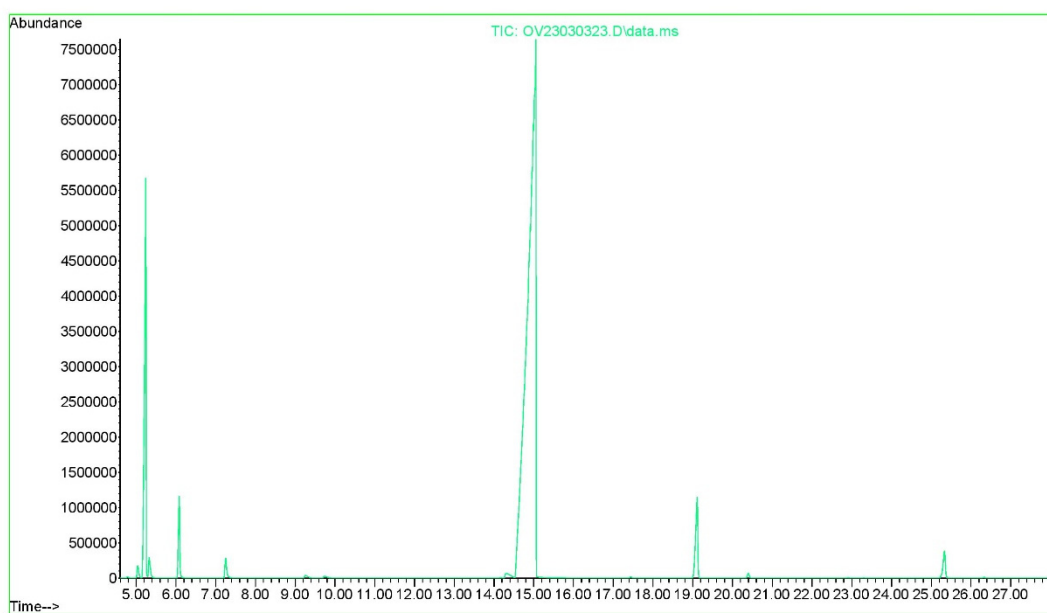


Figure 17 GC-MS chromatogram of *O. vulgare* after 110 days of storage

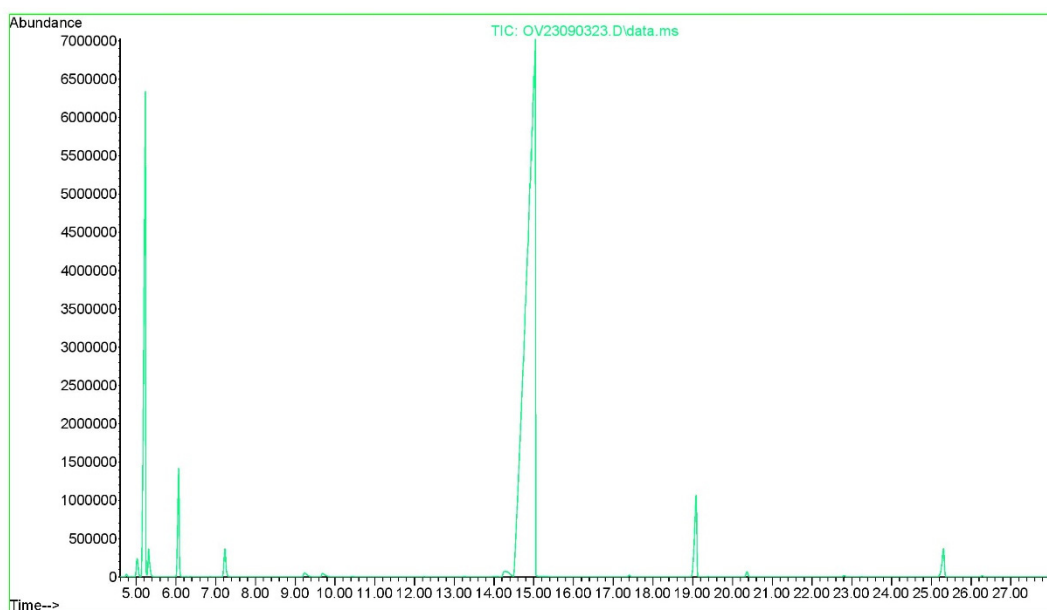


Figure 18 GC-MS chromatogram of *O. vulgare* after 120 days of storage

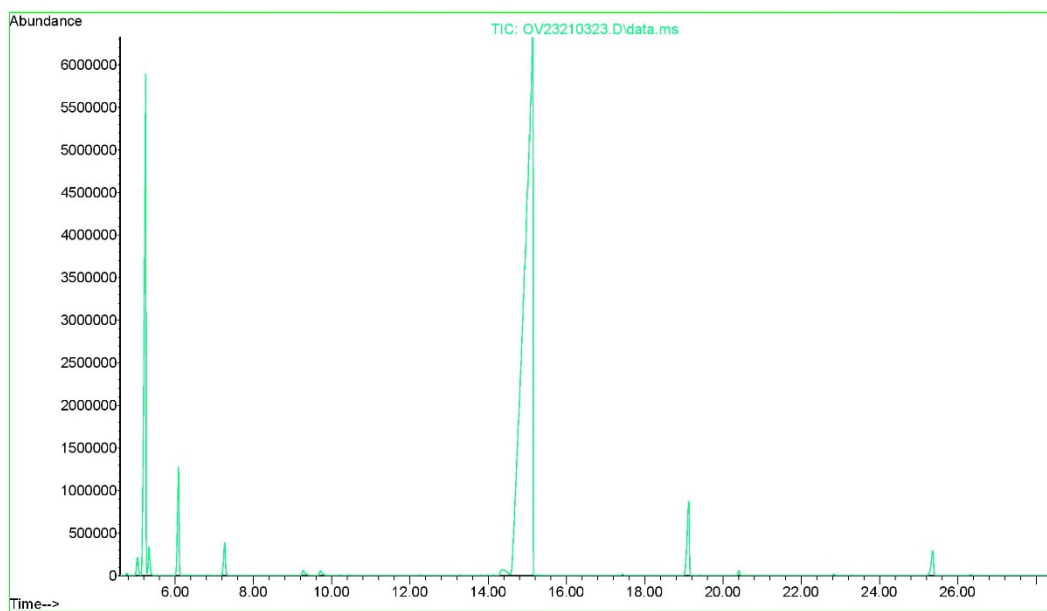


Figure 19 GC-MS chromatogram of *O. vulgare* after 130 days of storage

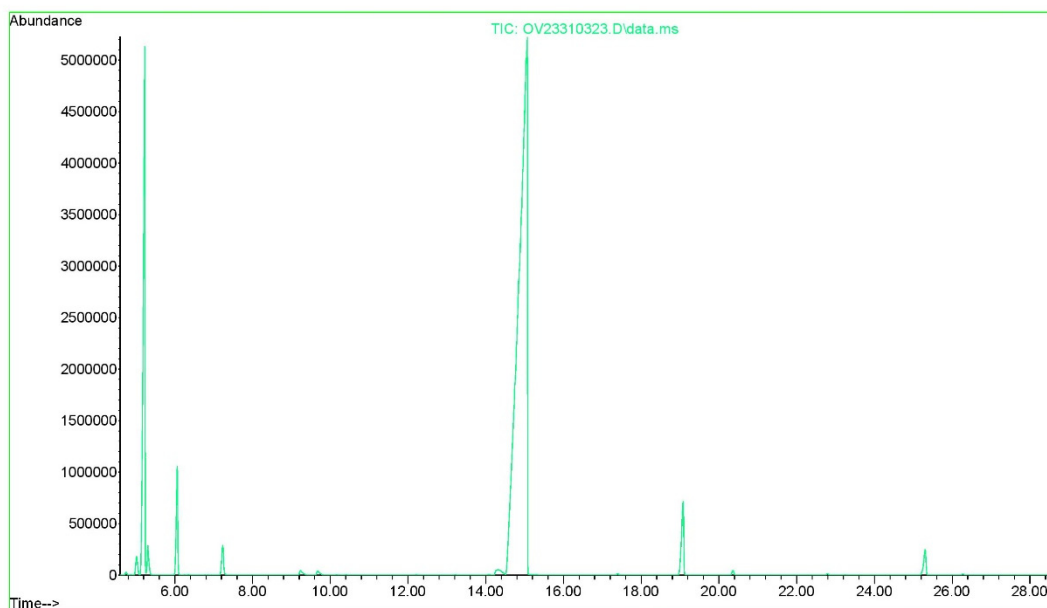


Figure 20 GC-MS chromatogram of *O. vulgare* after 140 days of storage

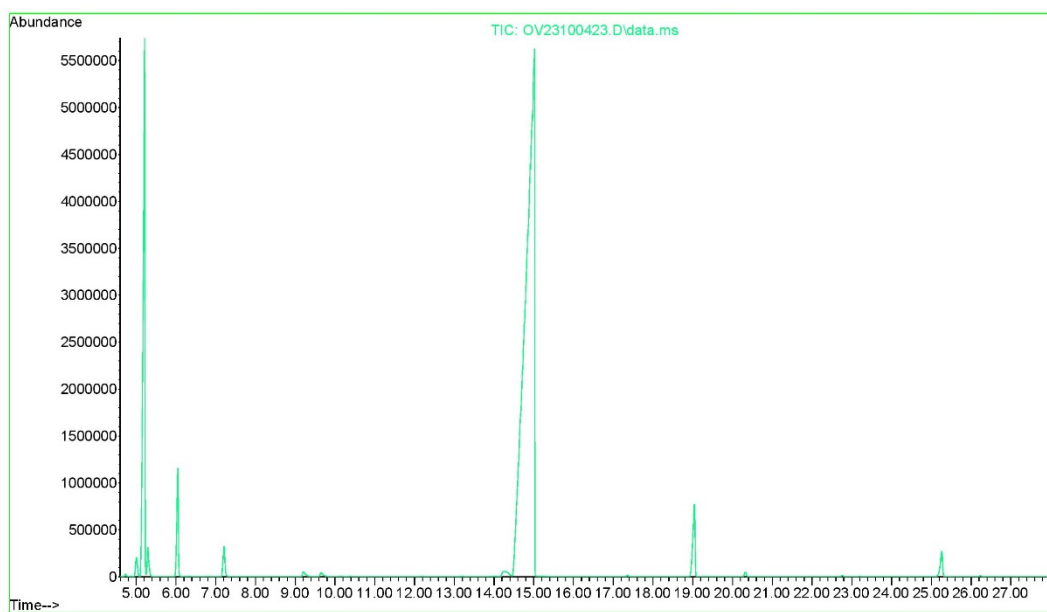


Figure 21 GC-MS chromatogram of *O. vulgare* after 150 days of storage

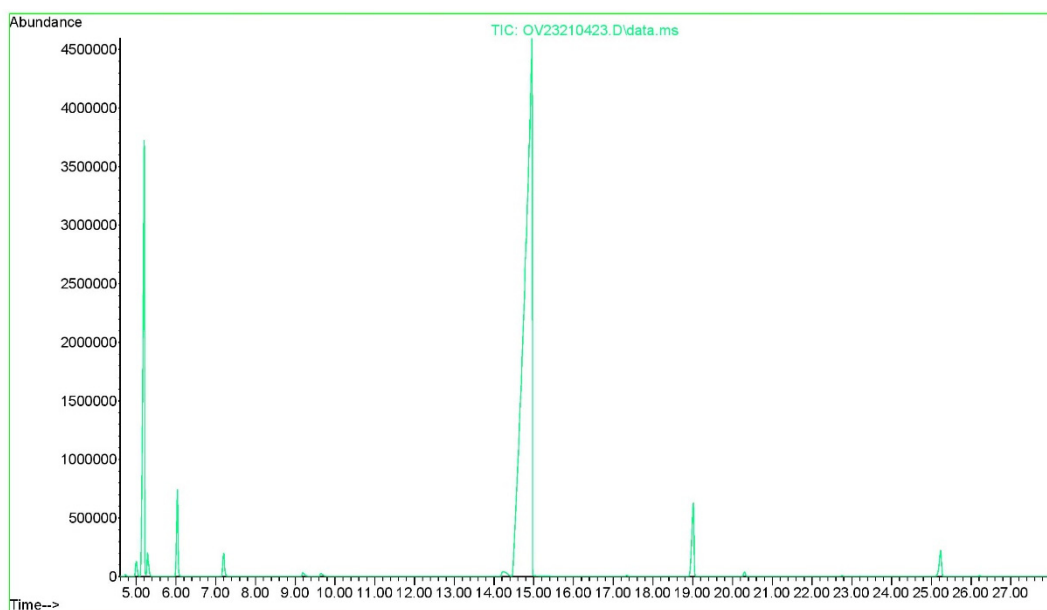


Figure 22 GC-MS chromatogram of *O. vulgare* after 160 days of storage

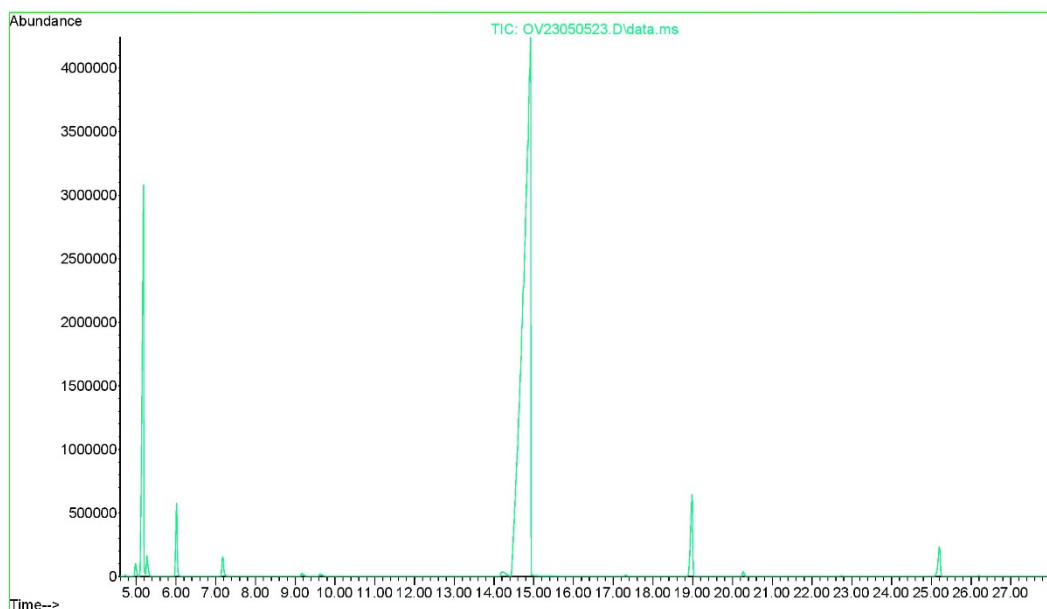


Figure 23 GC-MS chromatogram of *O. vulgare* after 170 days of storage

### 3.3. GC-MS chromatograms of the *O. vulgare* essential oil during storage in glass tubes sealed with cap under direct sunlight exposure for 6 months

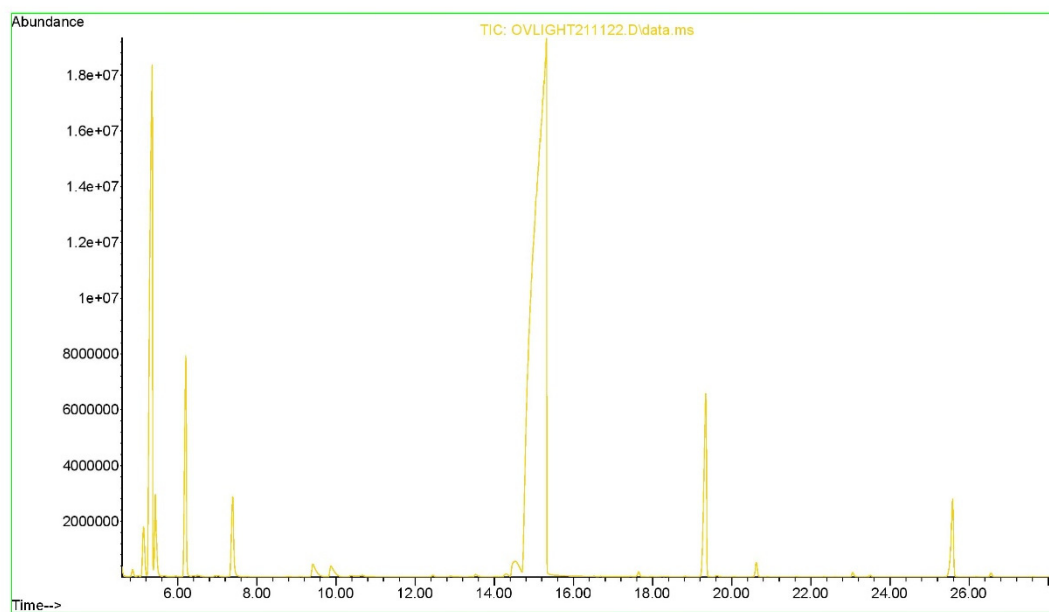


Figure 24 GC-MS chromatogram of *O. vulgare* after 10 days of storage

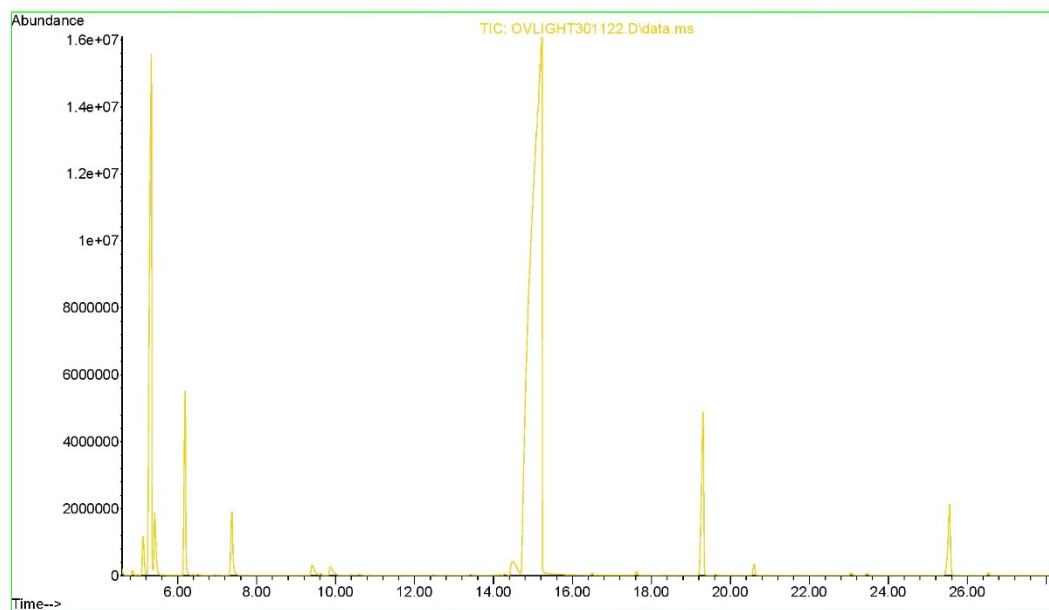


Figure 25 GC-MS chromatogram of *O. vulgare* after 20 days of storage

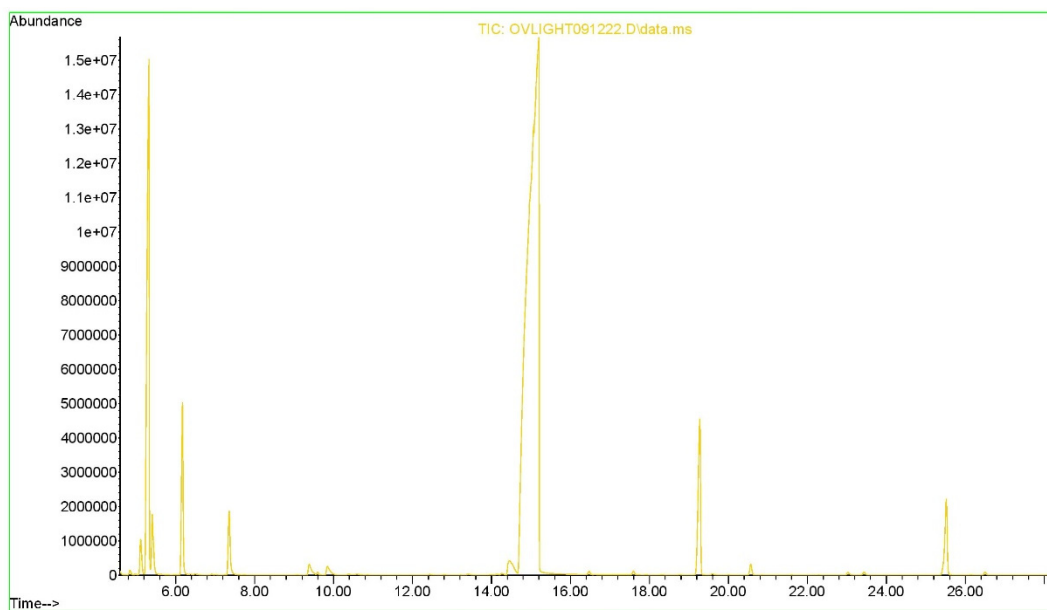


Figure 26 GC-MS chromatogram of *O. vulgare* after 30 days of storage

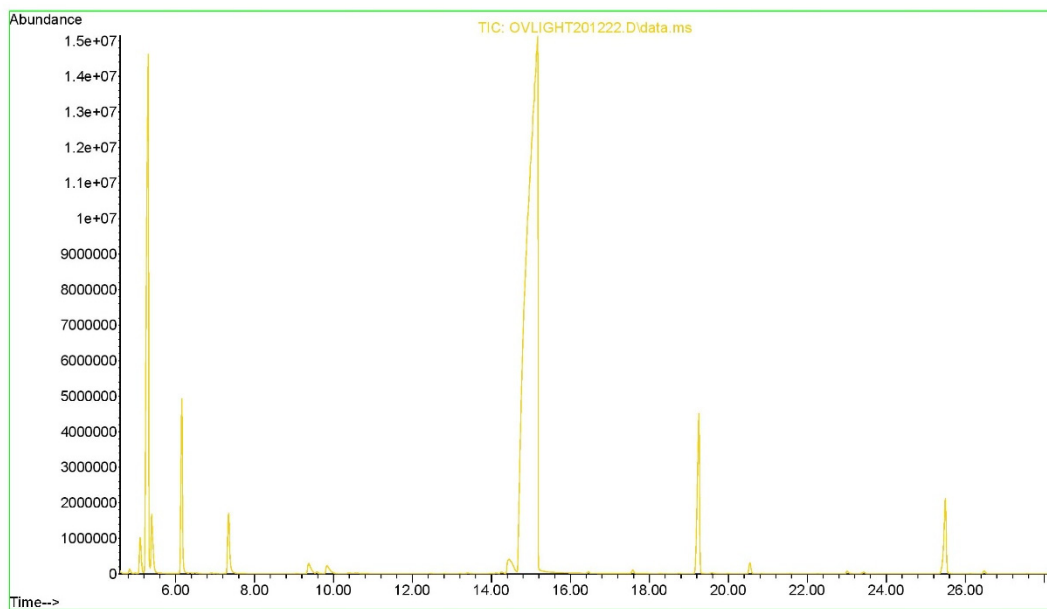


Figure 27 GC-MS chromatogram of *O. vulgare* after 40 days of storage

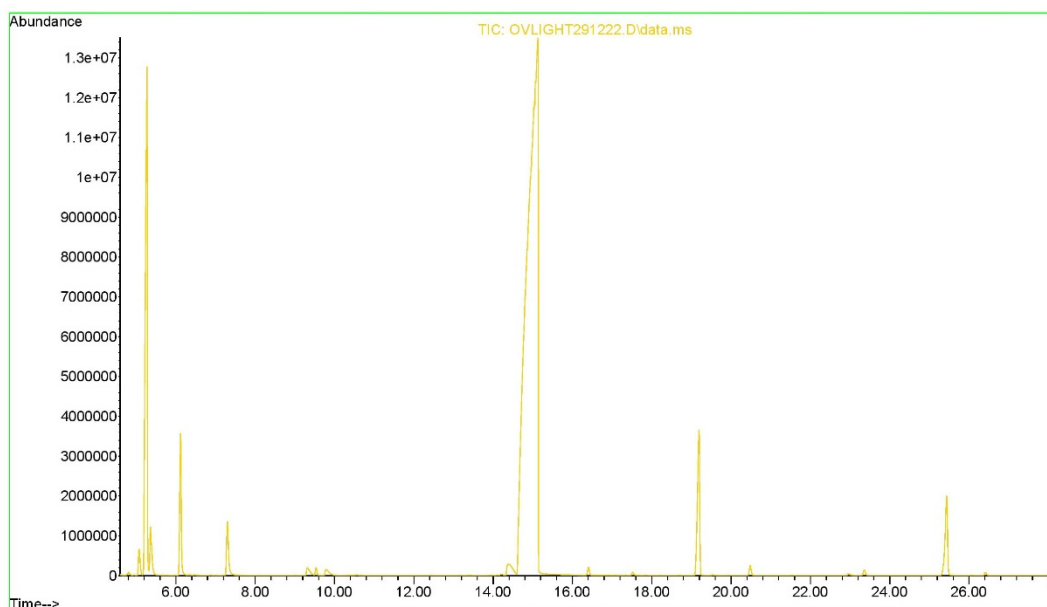


Figure 28 GC-MS chromatogram of *O. vulgare* after 50 days of storage

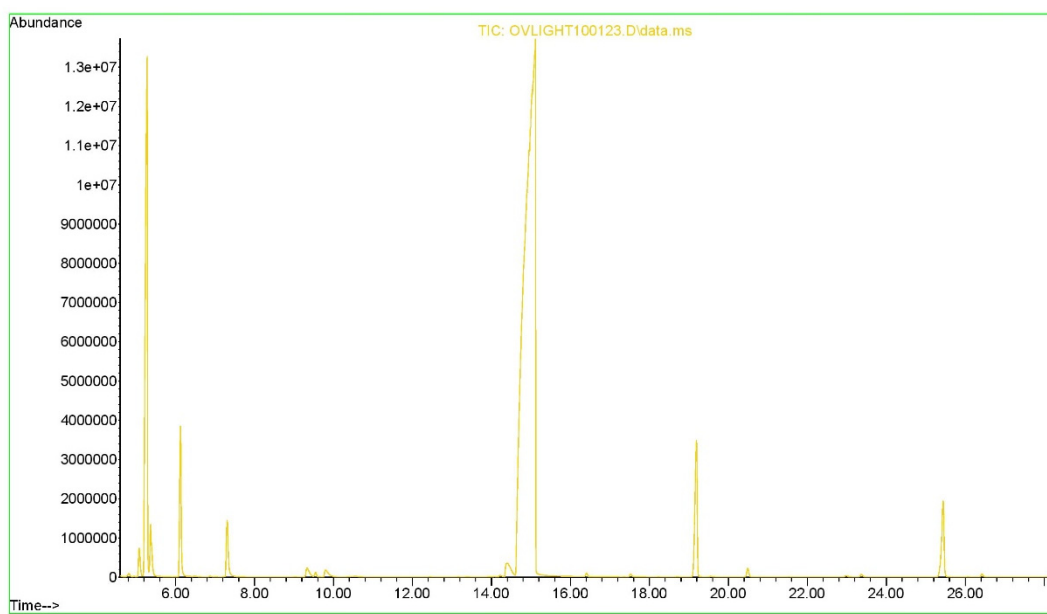


Figure 29 GC-MS chromatogram of *O. vulgare* after 60 days of storage

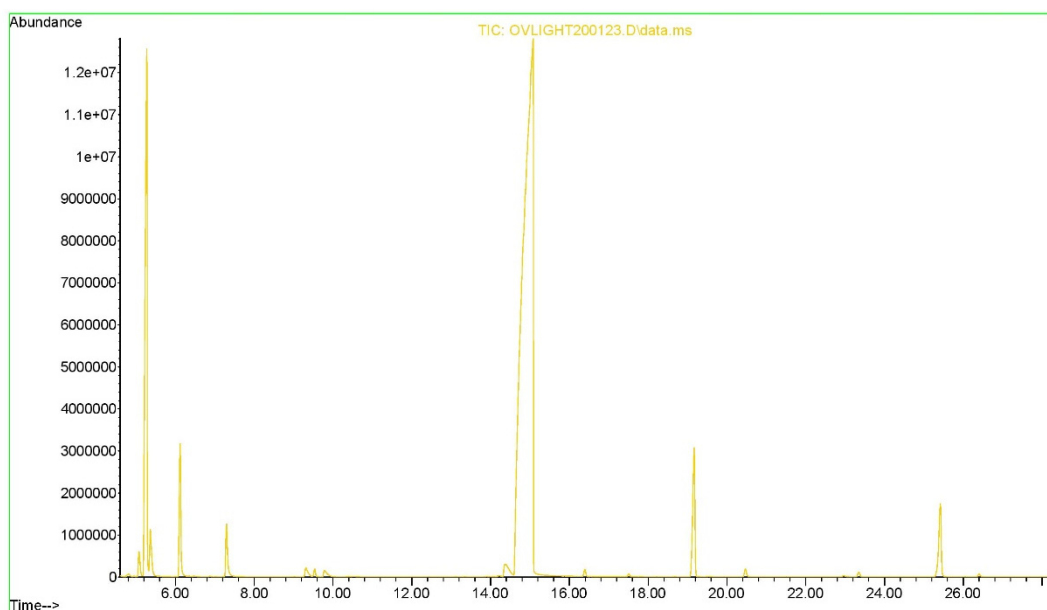


Figure 30 GC-MS chromatogram of *O. vulgare* after 70 days of storage

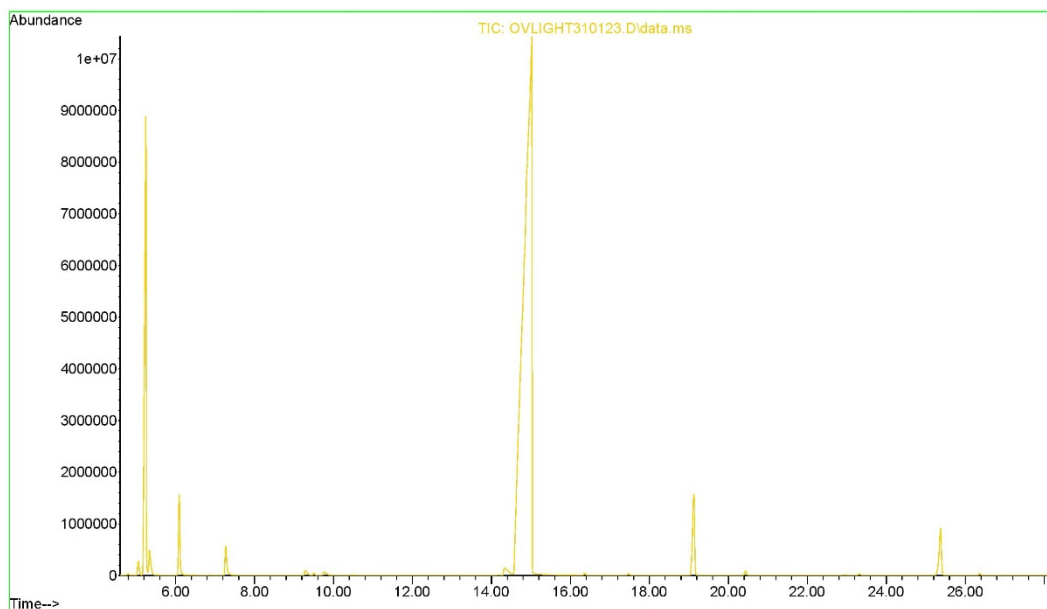


Figure 31 GC-MS chromatogram of *O. vulgare* after 80 days of storage

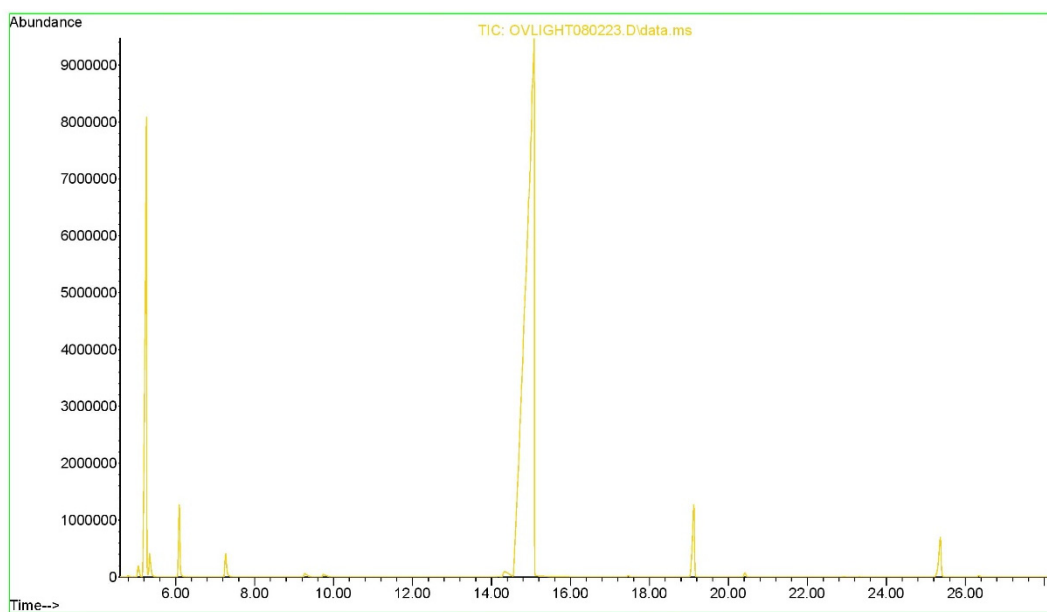


Figure 32 GC-MS chromatogram of *O. vulgare* after 90 days of storage

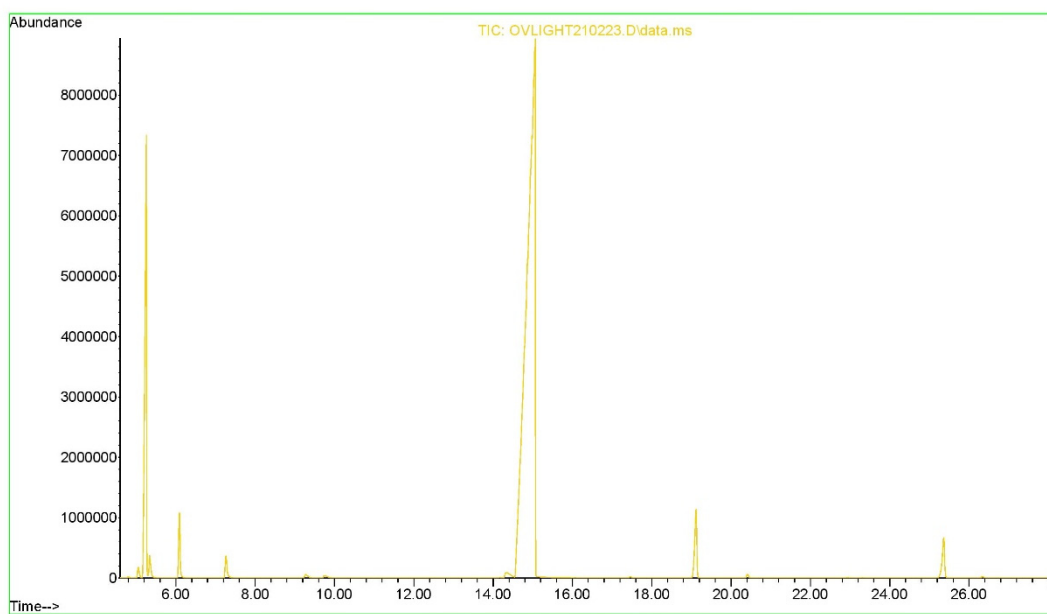


Figure 33 GC-MS chromatogram of *O. vulgare* after 100 days of storage

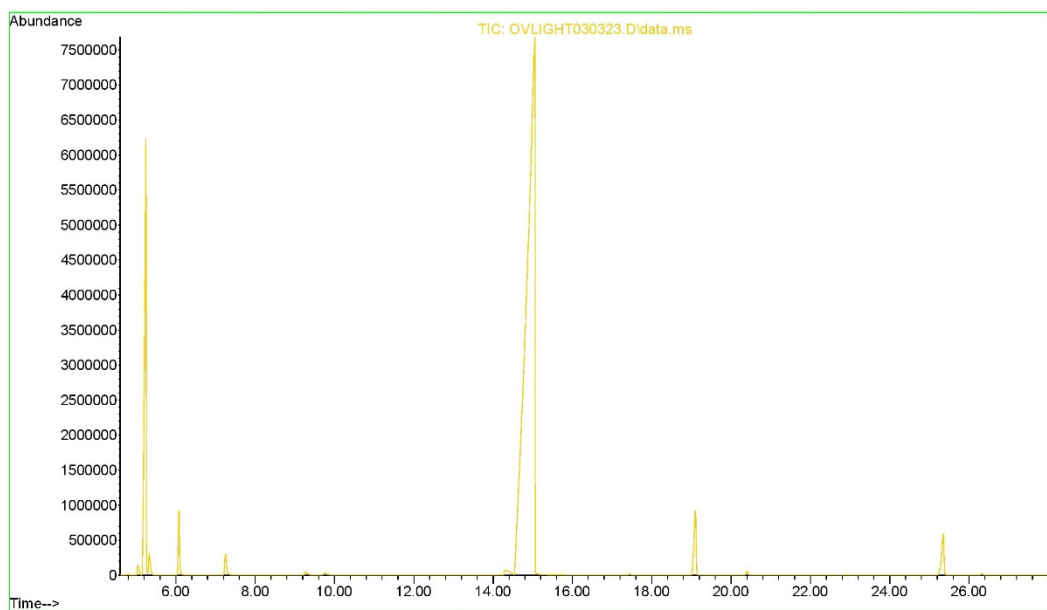


Figure 34 GC-MS chromatogram of *O. vulgare* after 110 days of storage

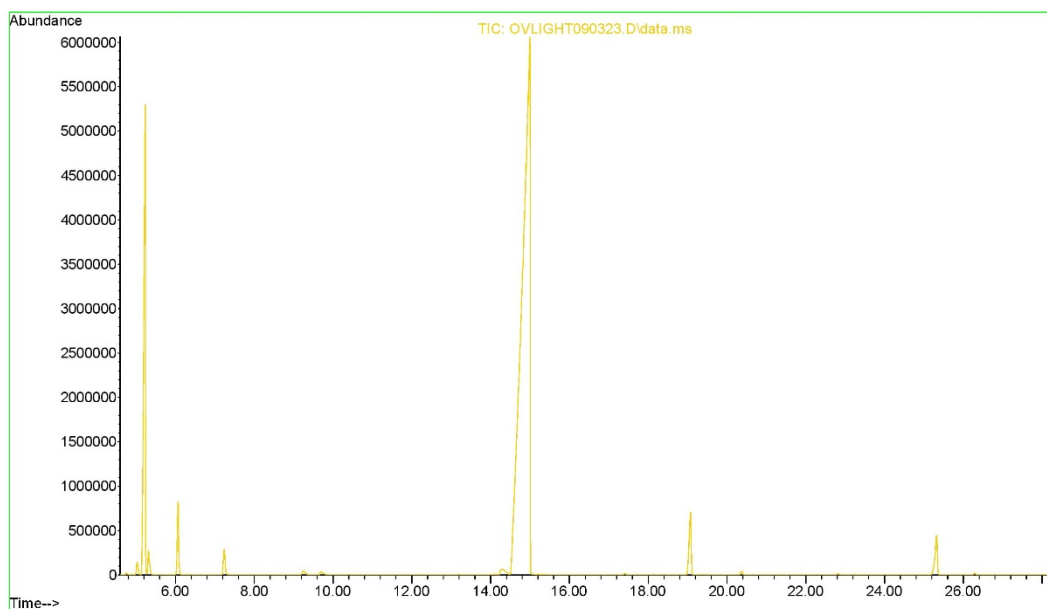


Figure 35 GC-MS chromatogram of *O. vulgare* after 120 days of storage

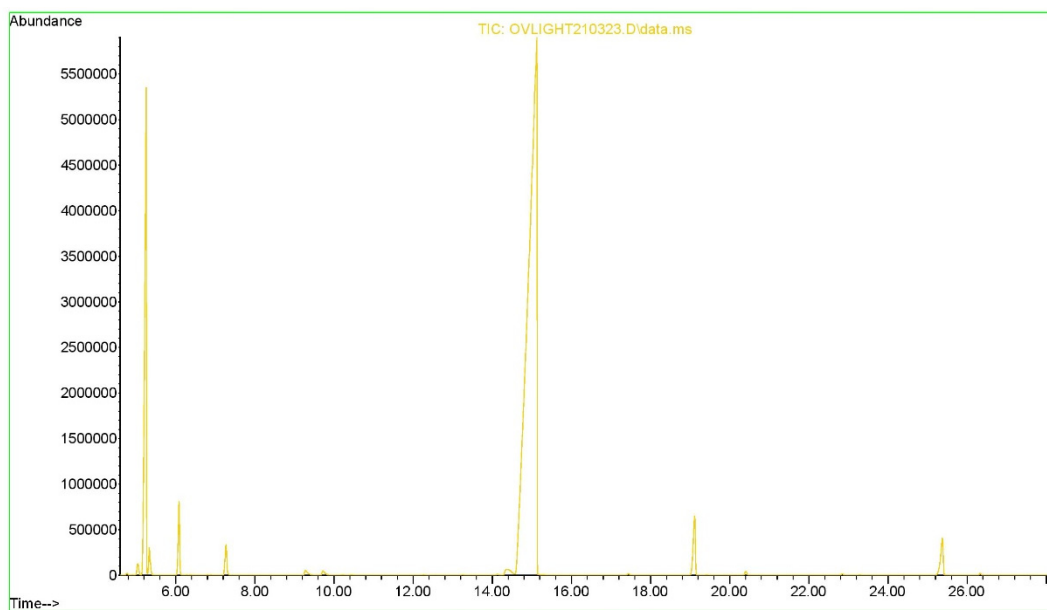


Figure 36 GC-MS chromatogram of *O. vulgare* after 130 days of storage

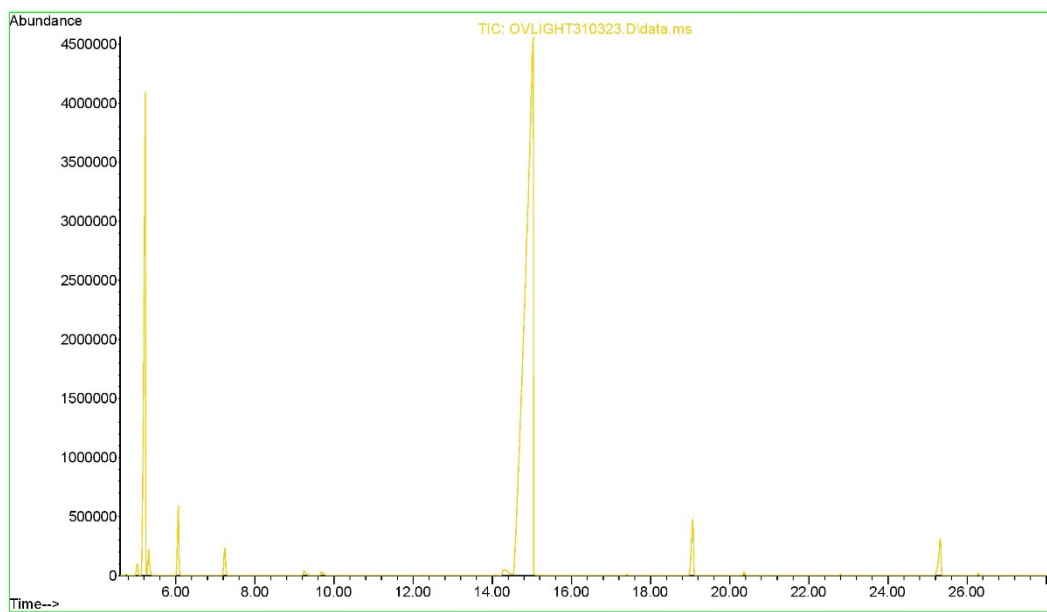


Figure 37 GC-MS chromatogram of *O. vulgare* after 140 days of storage

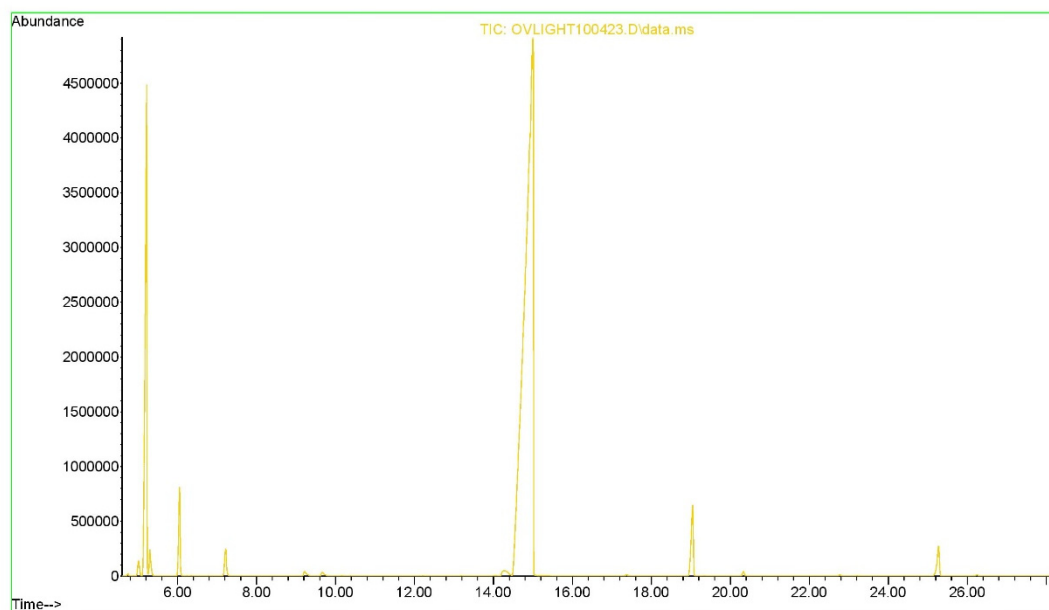


Figure 38 GC-MS chromatogram of *O. vulgare* after 150 days of storage

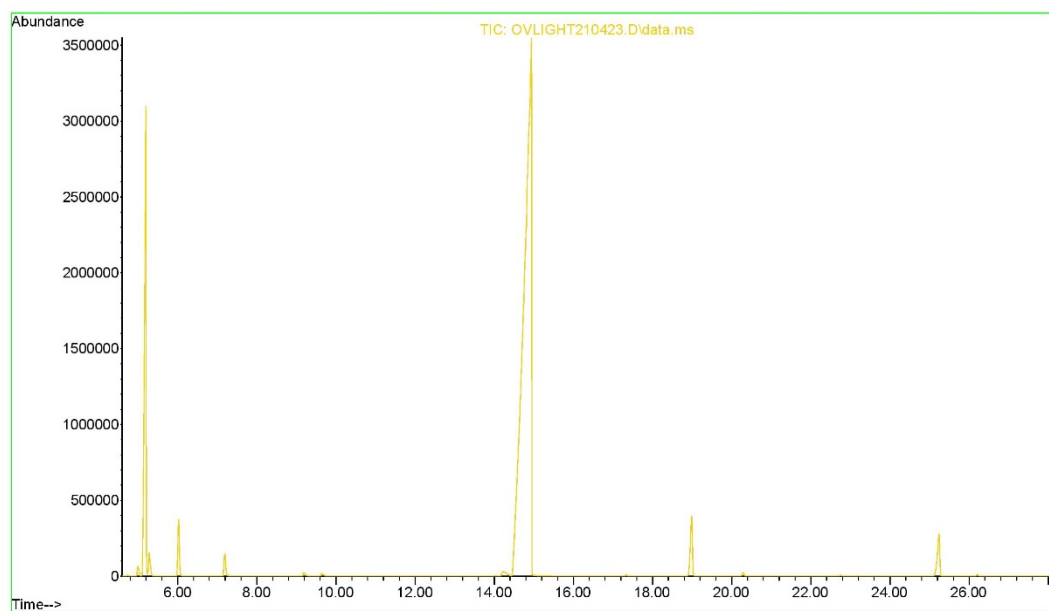


Figure 39 GC-MS chromatogram of *O. vulgare* after 160 days of storage

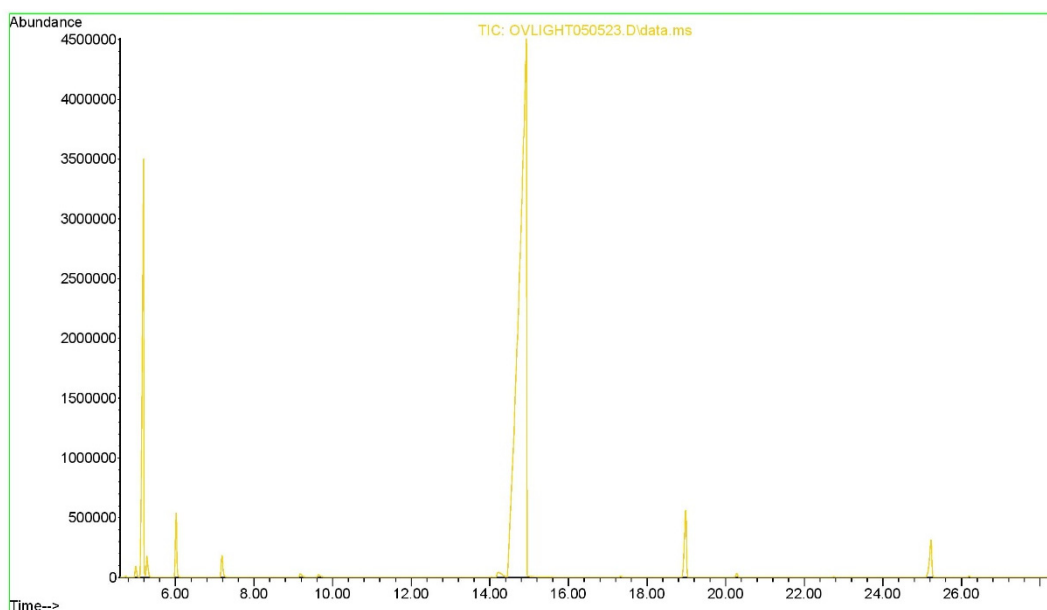


Figure 40 GC-MS chromatogram of *O. vulgare* after 170 days of storage

### 3.4. GC-MS chromatograms of the *O. vulgare* essential oil during storage in sealed glass ampoules at 35 °C for 3 months

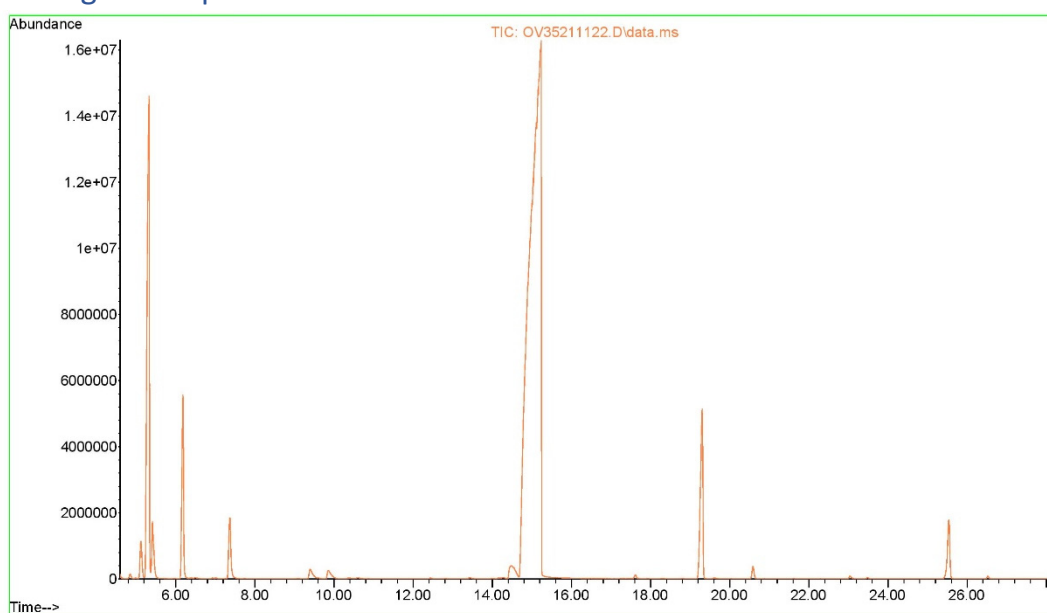


Figure 41 GC-MS chromatogram of *O. vulgare* after 10 days of storage

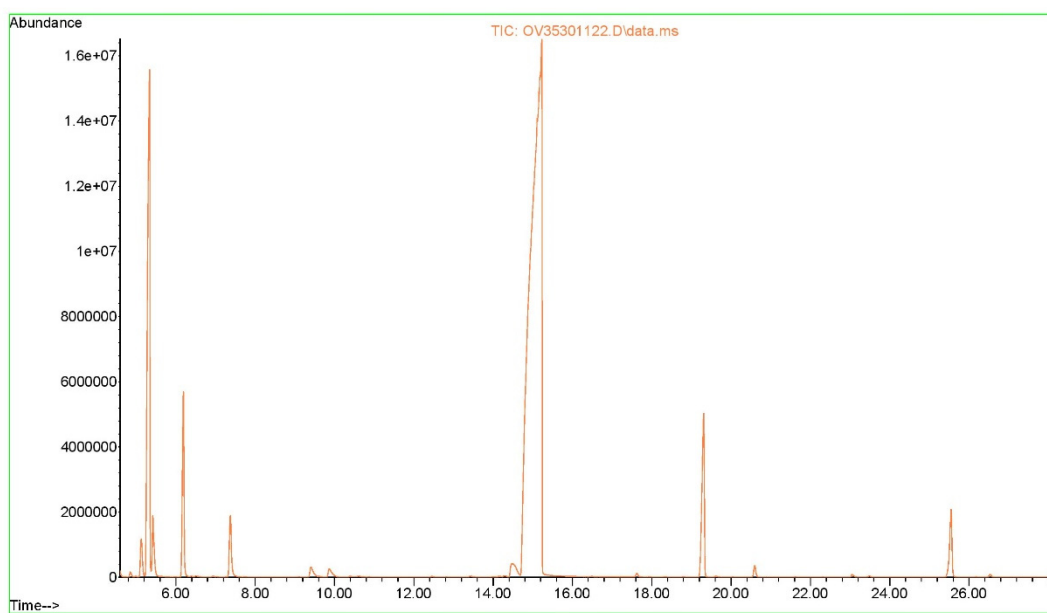


Figure 42 GC-MS chromatogram of *O. vulgare* after 20 days of storage

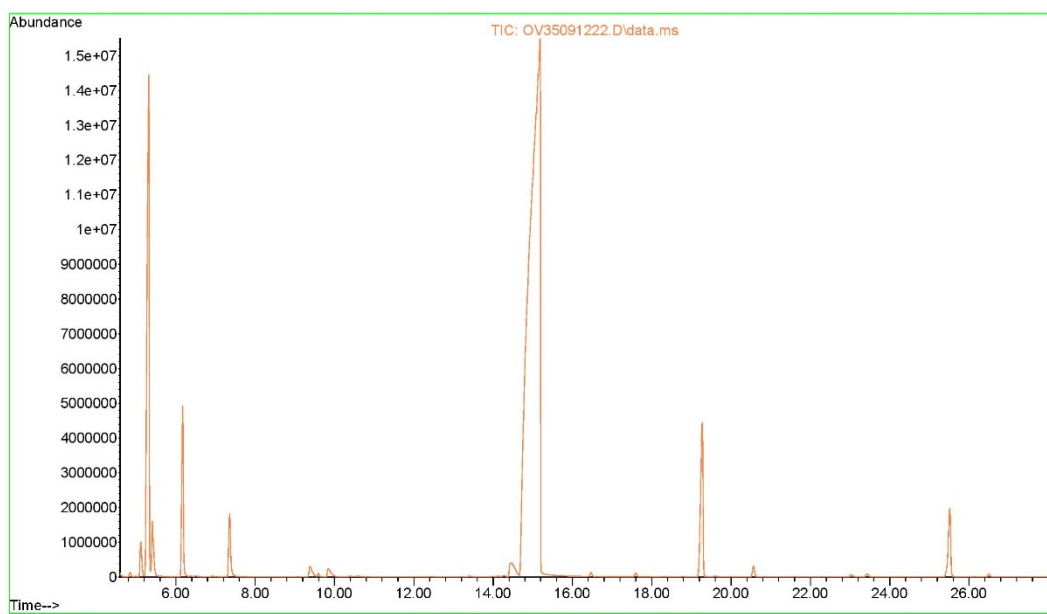


Figure 43 GC-MS chromatogram of *O. vulgare* after 30 days of storage

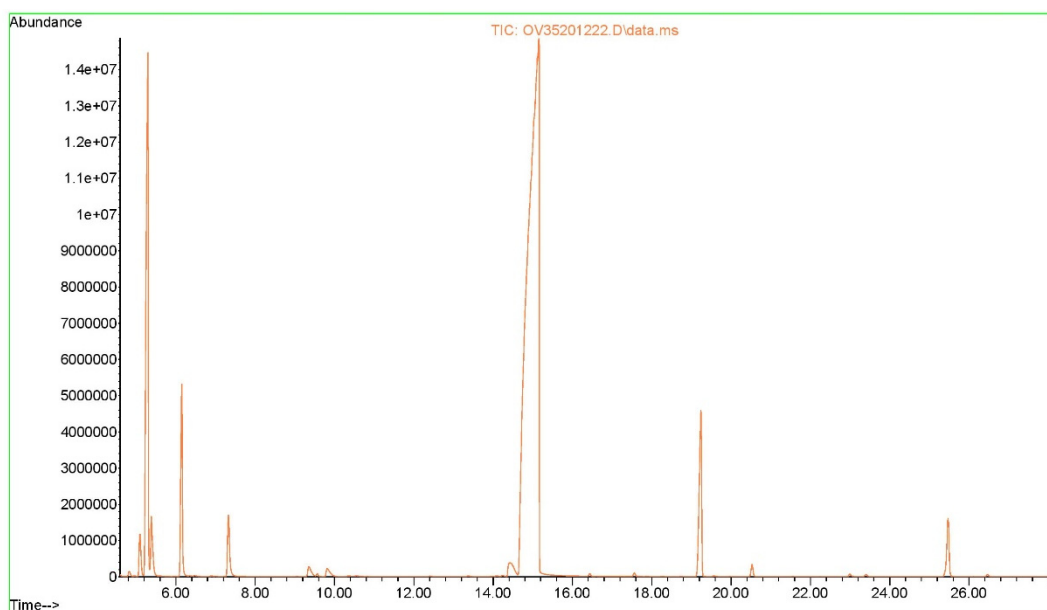


Figure 44 GC-MS chromatogram of *O. vulgare* after 40 days of storage

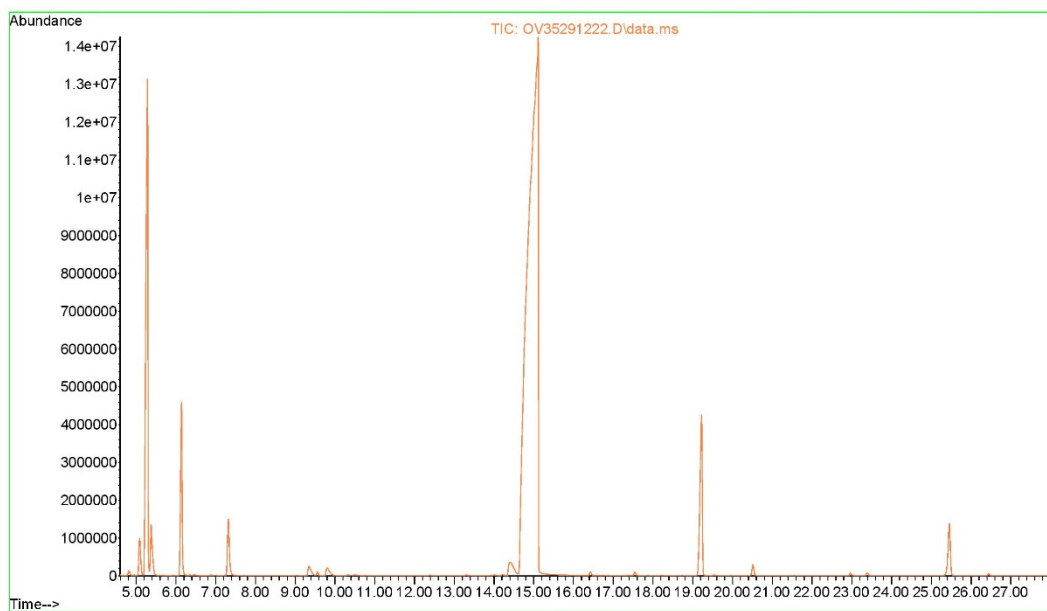


Figure 45 GC-MS chromatogram of *O. vulgare* after 50 days of storage

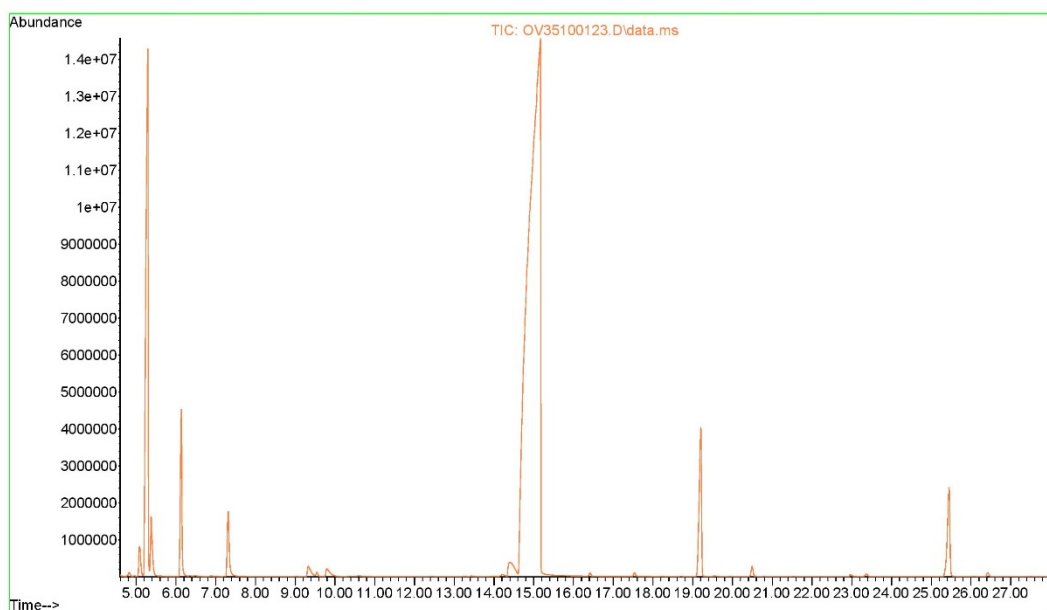


Figure 46 GC-MS chromatogram of *O. vulgare* after 60 days of storage

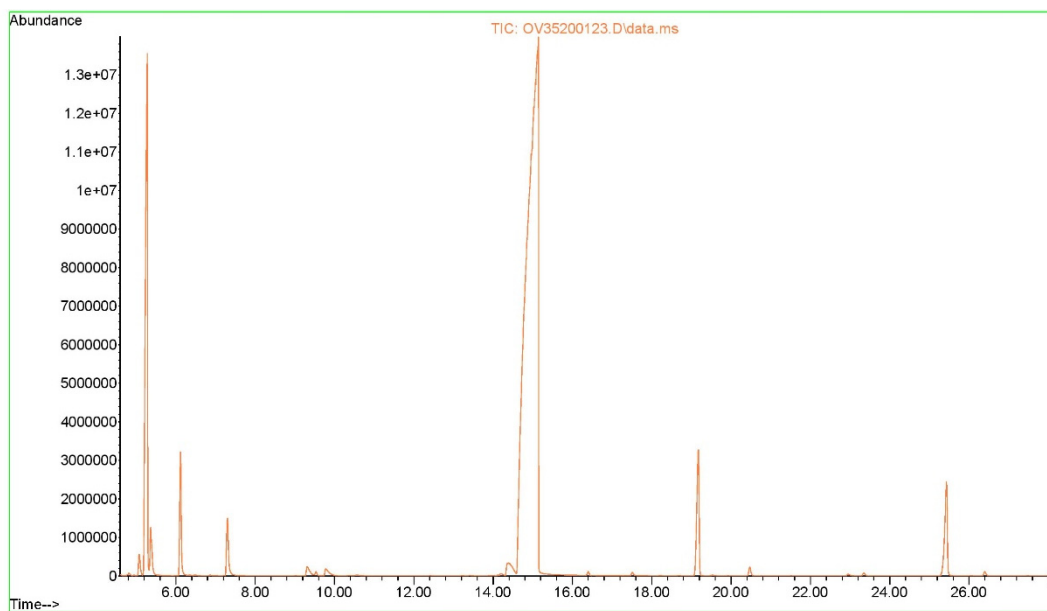


Figure 47 GC-MS chromatogram of *O. vulgare* after 70 days of storage

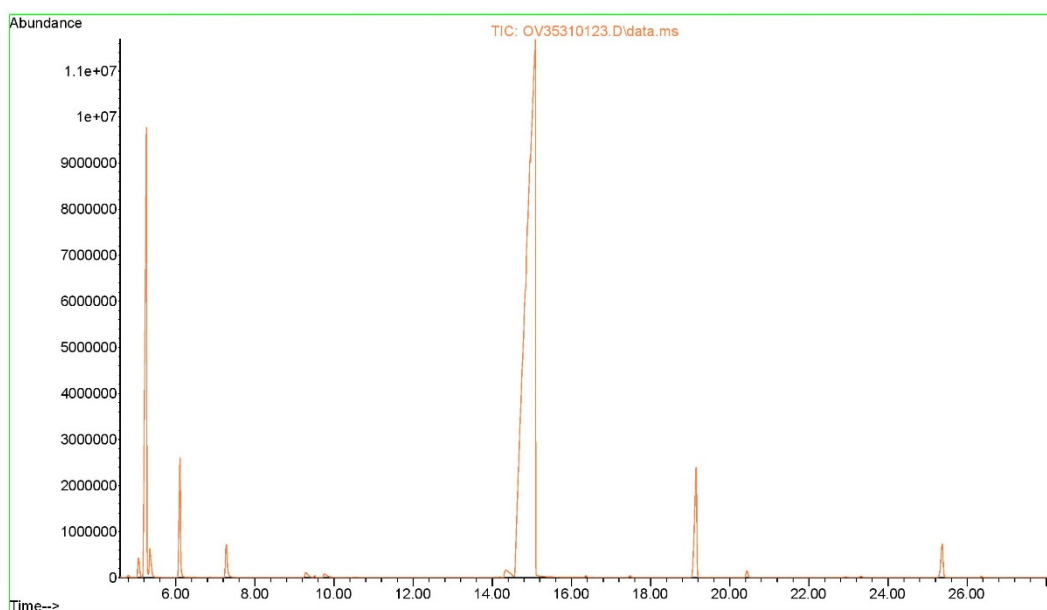


Figure 48 GC-MS chromatogram of *O. vulgare* after 80 days of storage

### 3.5. GC-MS chromatograms of the *O. vulgare* essential oil during storage in sealed glass ampoules at 45 °C for 3 months

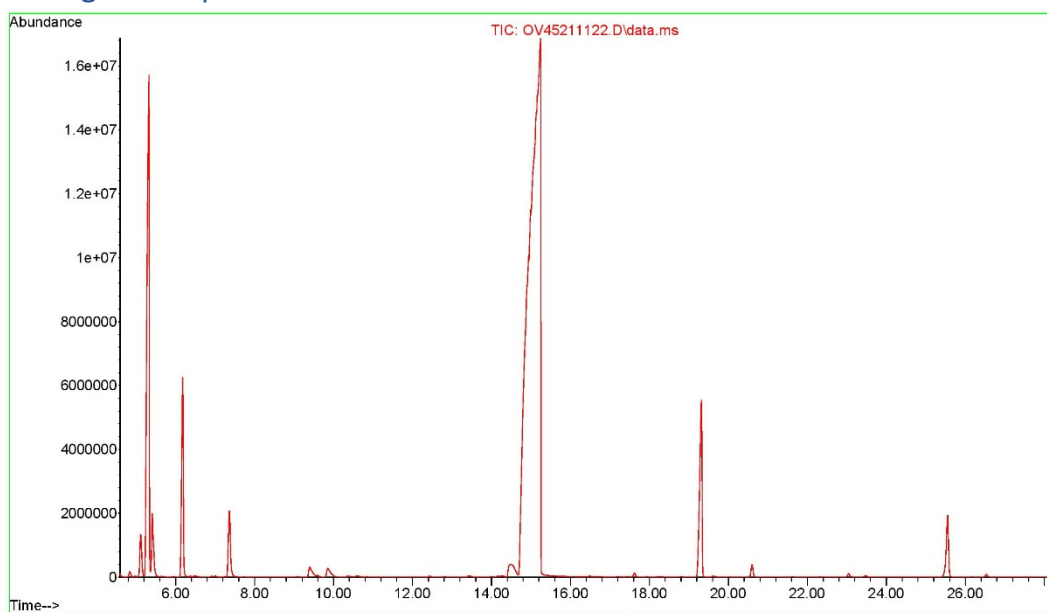


Figure 49 GC-MS chromatogram of *O. vulgare* after 10 days of storage

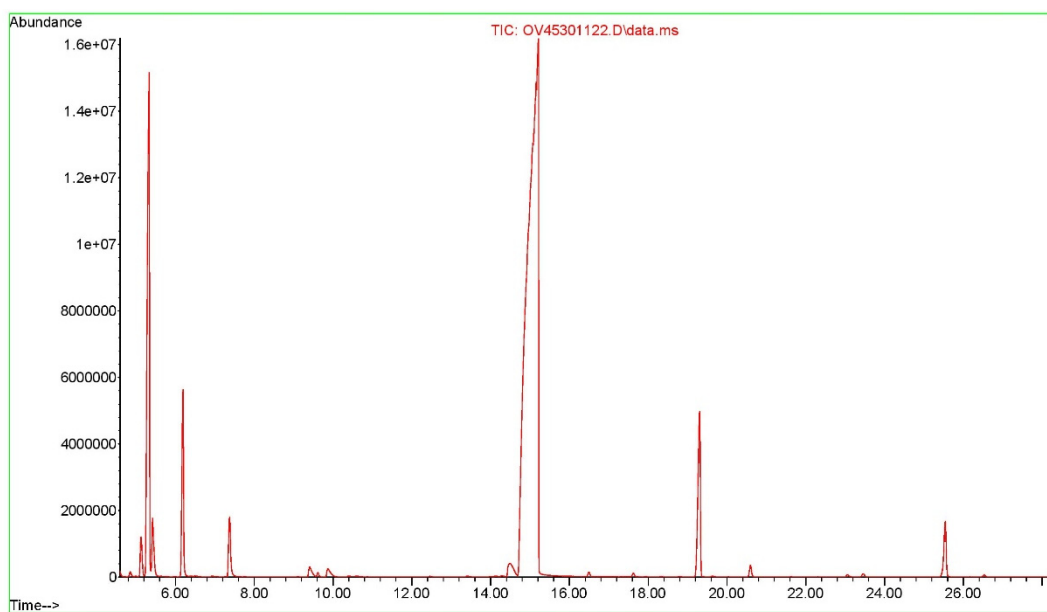


Figure 50 GC-MS chromatogram of *O. vulgare* after 20 days of storage

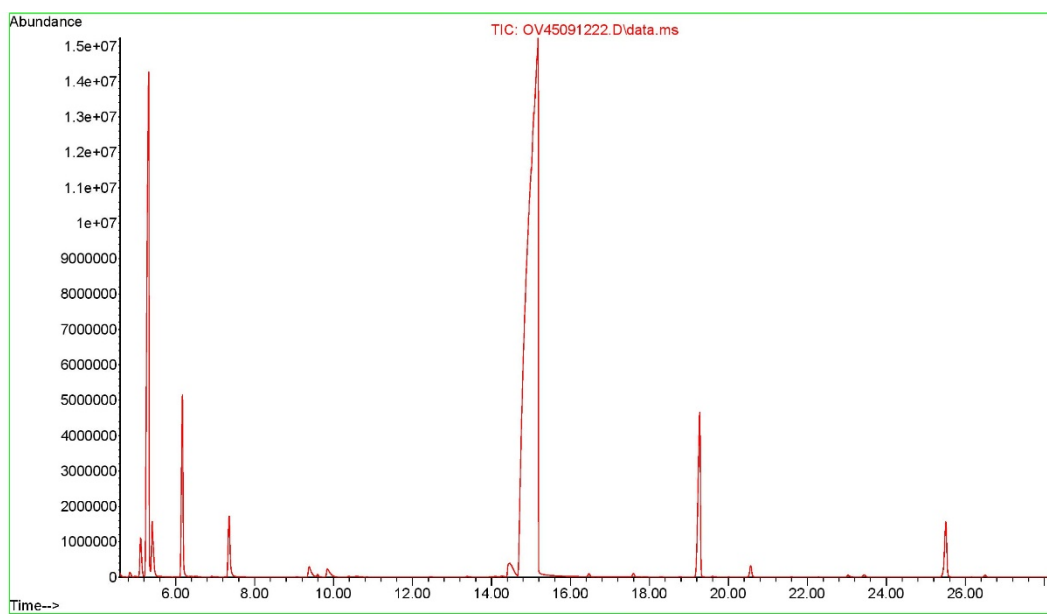


Figure 51 GC-MS chromatogram of *O. vulgare* after 30 days of storage

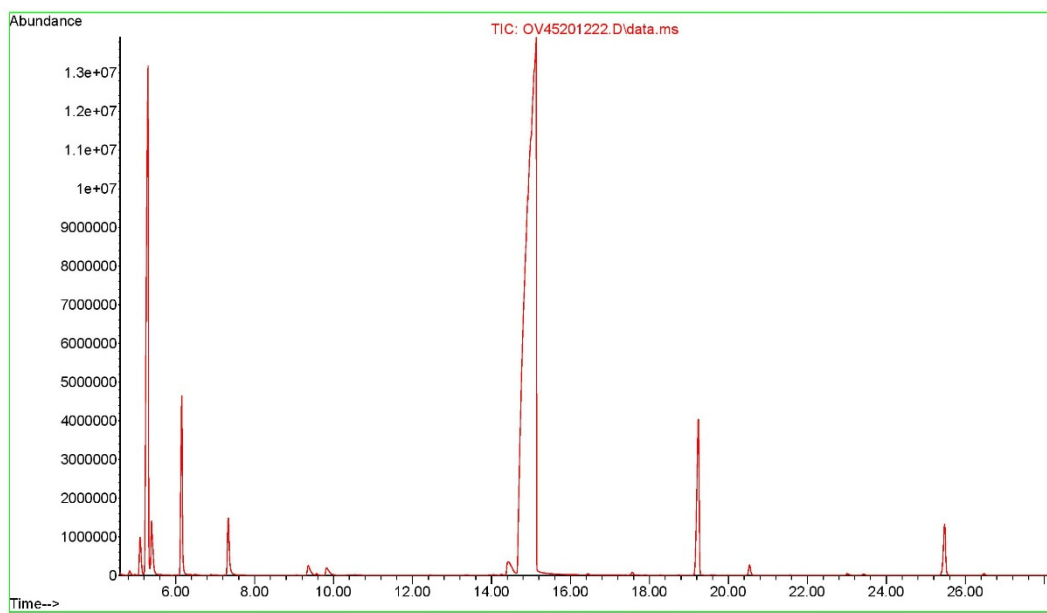


Figure 52 GC-MS chromatogram of *O. vulgare* after 40 days of storage

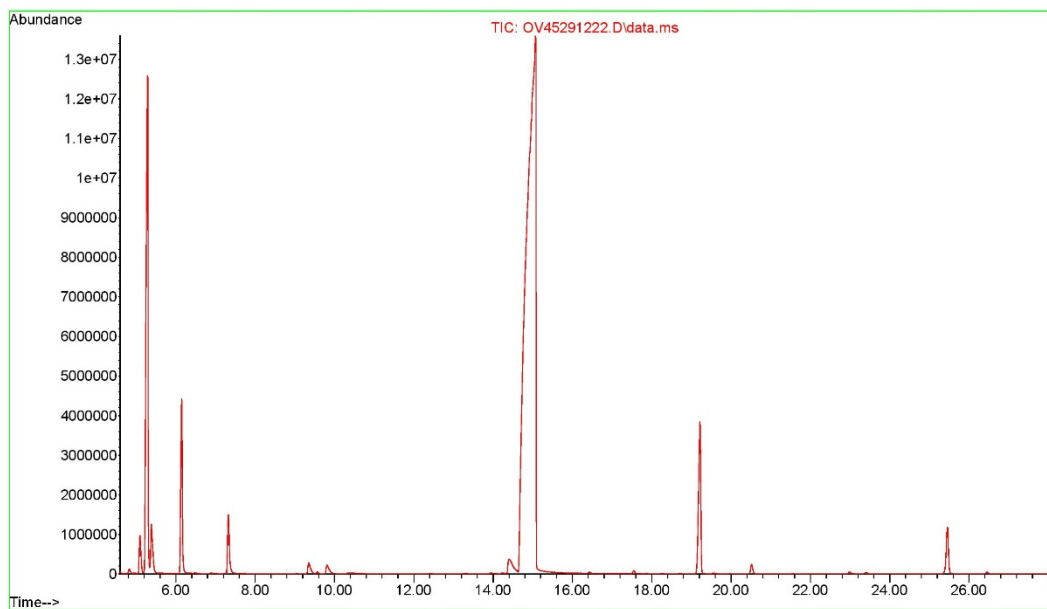


Figure 53 GC-MS chromatogram of *O. vulgare* after 50 days of storage

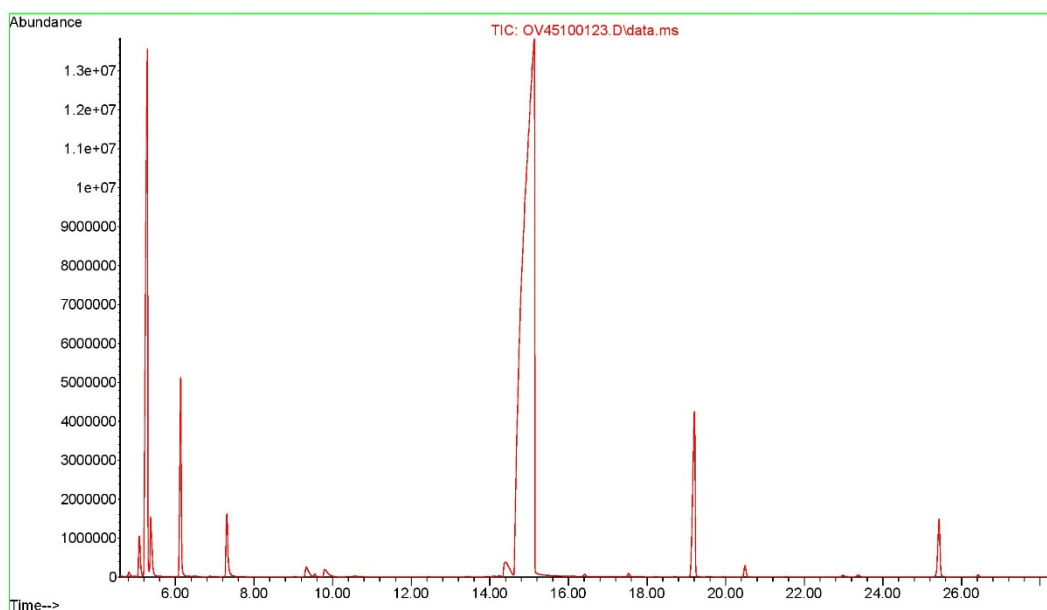


Figure 54 GC-MS chromatogram of *O. vulgare* after 60 days of storage

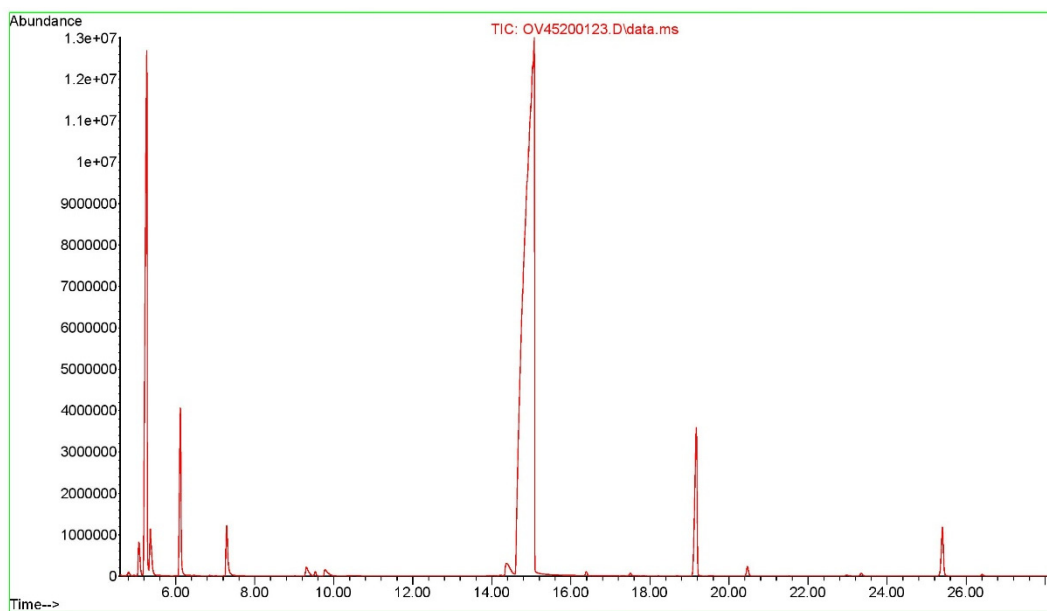


Figure 55 GC-MS chromatogram of *O. vulgare* after 70 days of storage

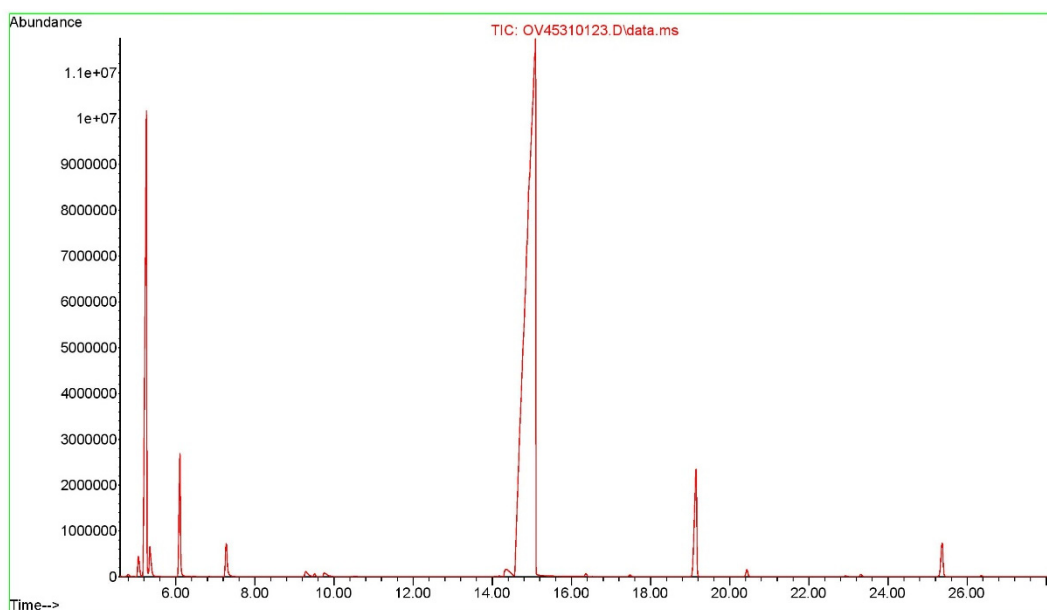


Figure 56 GC-MS chromatogram of *O. vulgare* after 80 days of storage

### 3.6. GC-MS chromatograms of the *O. vulgare* essential oil during storage in glass tubes sealed with cap at 35 °C for 3 months

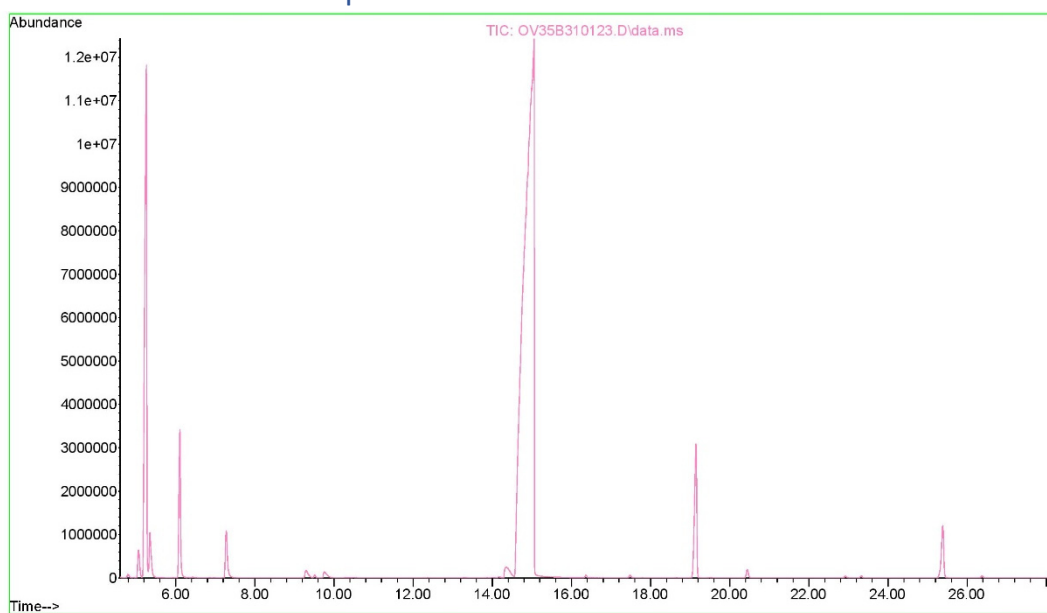


Figure 57 GC-MS chromatogram of *O. vulgare* after 10 days of storage

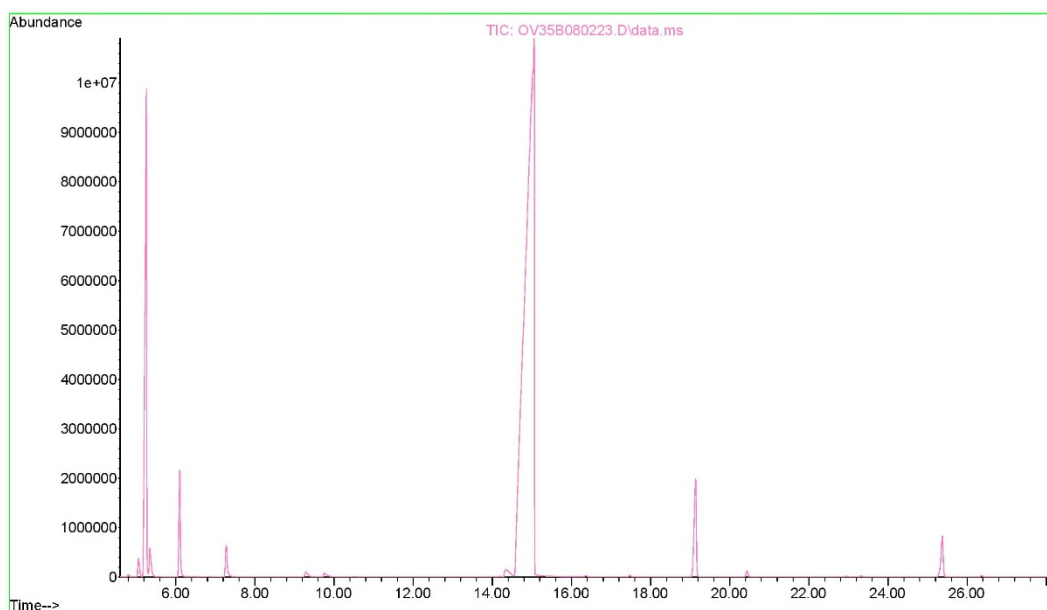


Figure 58 GC-MS chromatogram of *O. vulgare* after 20 days of storage

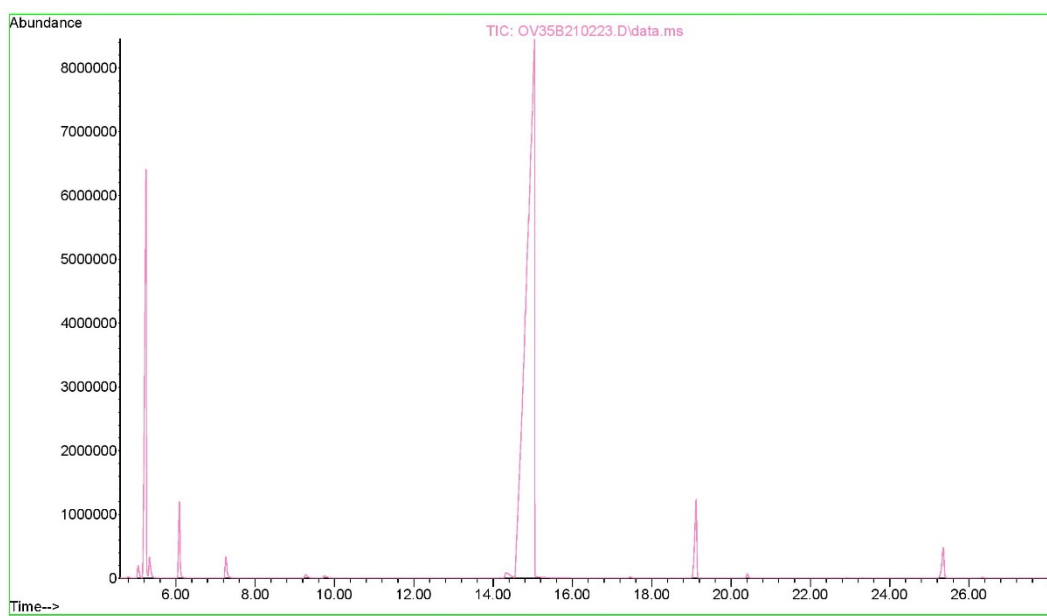


Figure 59 GC-MS chromatogram of *O. vulgare* after 30 days of storage

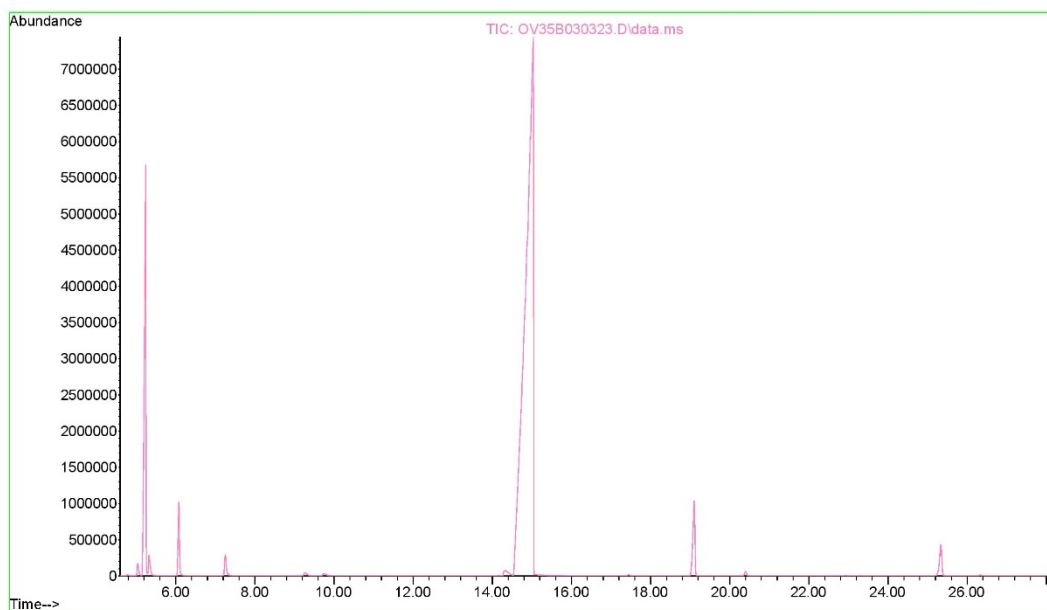


Figure 60 GC-MS chromatogram of *O. vulgare* after 40 days of storage

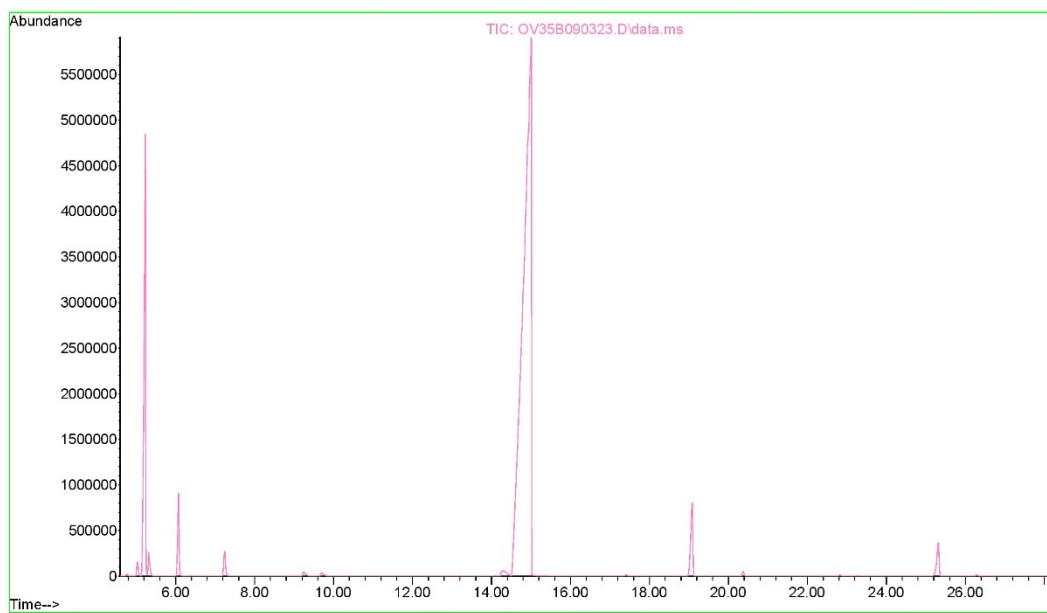


Figure 61 GC-MS chromatogram of *O. vulgare* after 50 days of storage

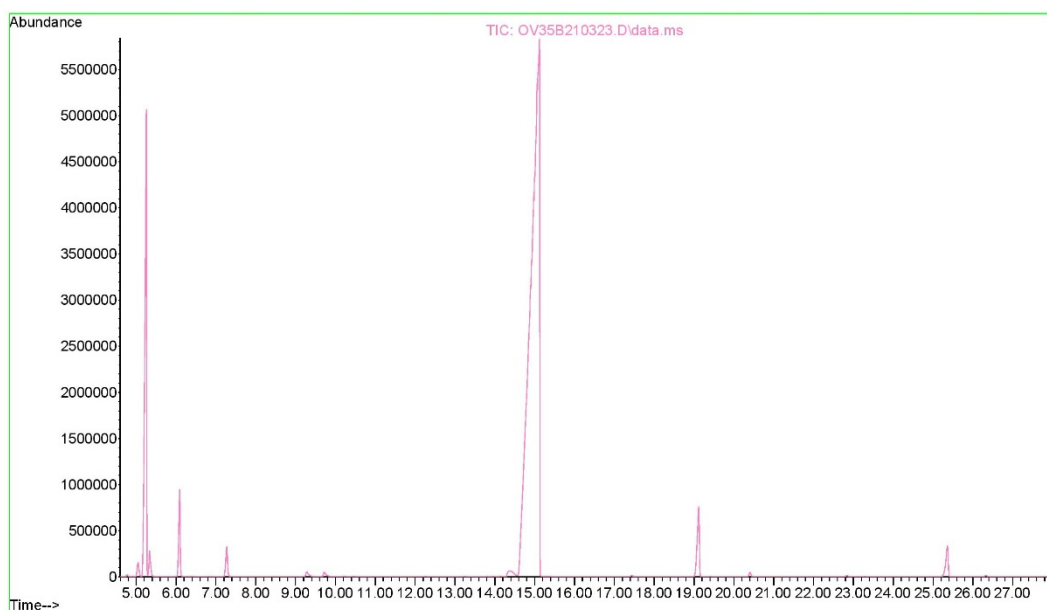


Figure 62 GC-MS chromatogram of *O. vulgare* after 60 days of storage

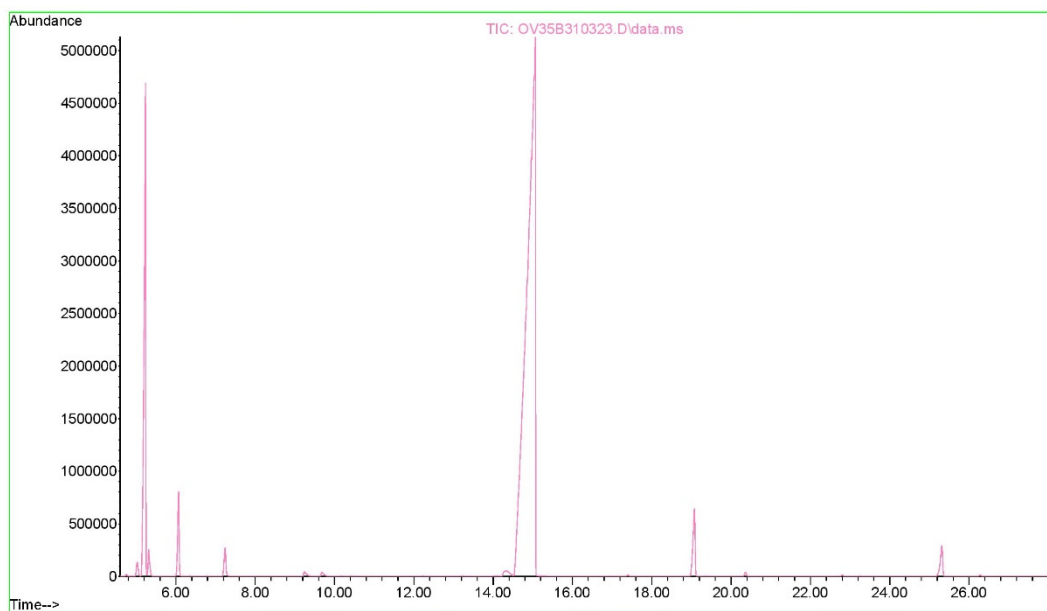


Figure 63 GC-MS chromatogram of *O. vulgare* after 70 days of storage

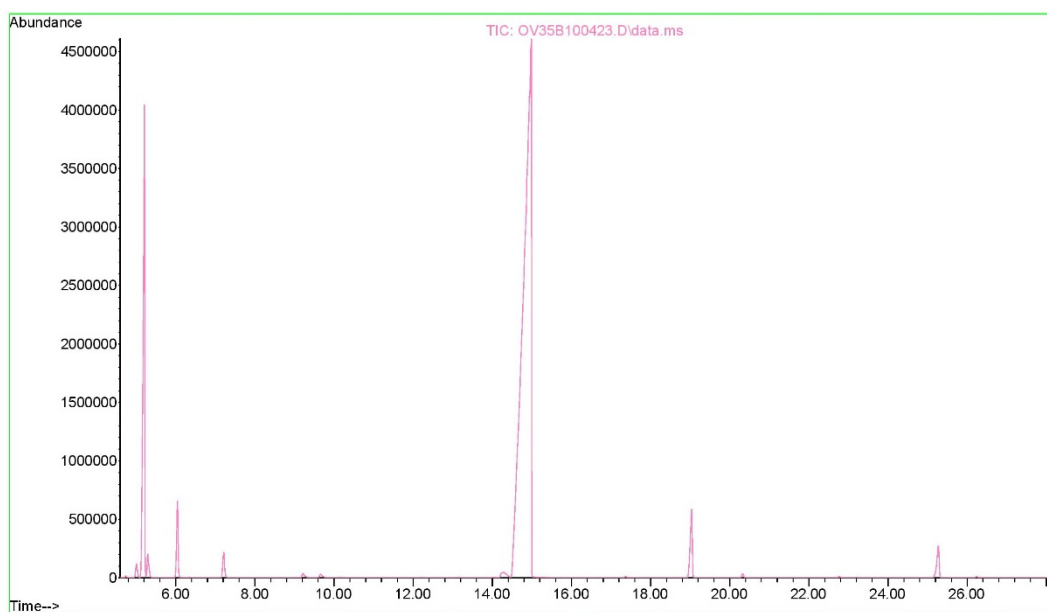


Figure 64 GC-MS chromatogram of *O. vulgare* after 80 days of storage

### 3.7. GC-MS chromatograms of the *O. vulgare* essential oil during storage in glass tubes sealed with cap at 45 °C for 3 months

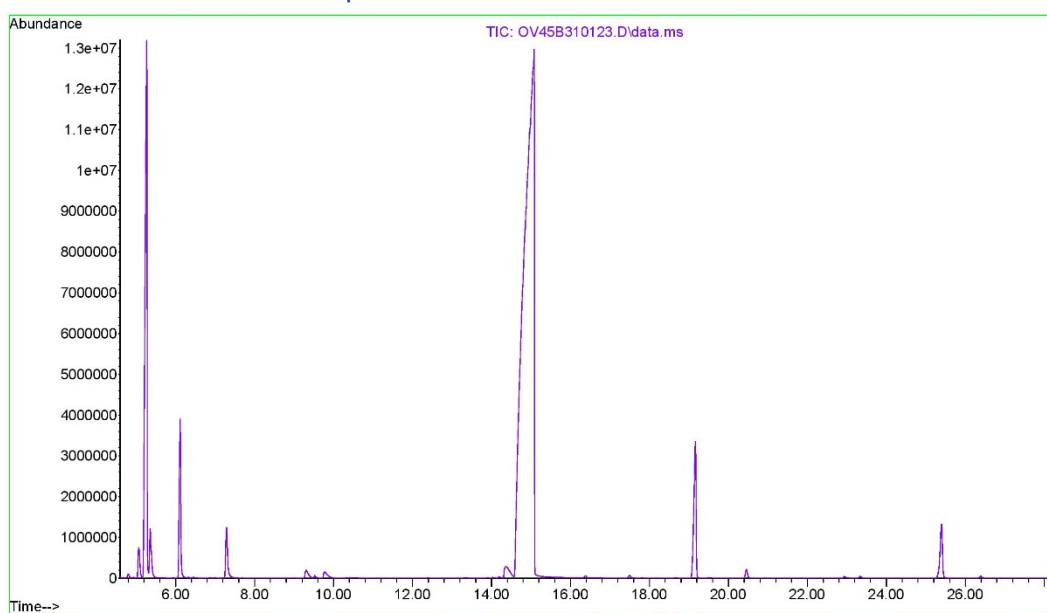


Figure 65 GC-MS chromatogram of *O. vulgare* after 10 days of storage

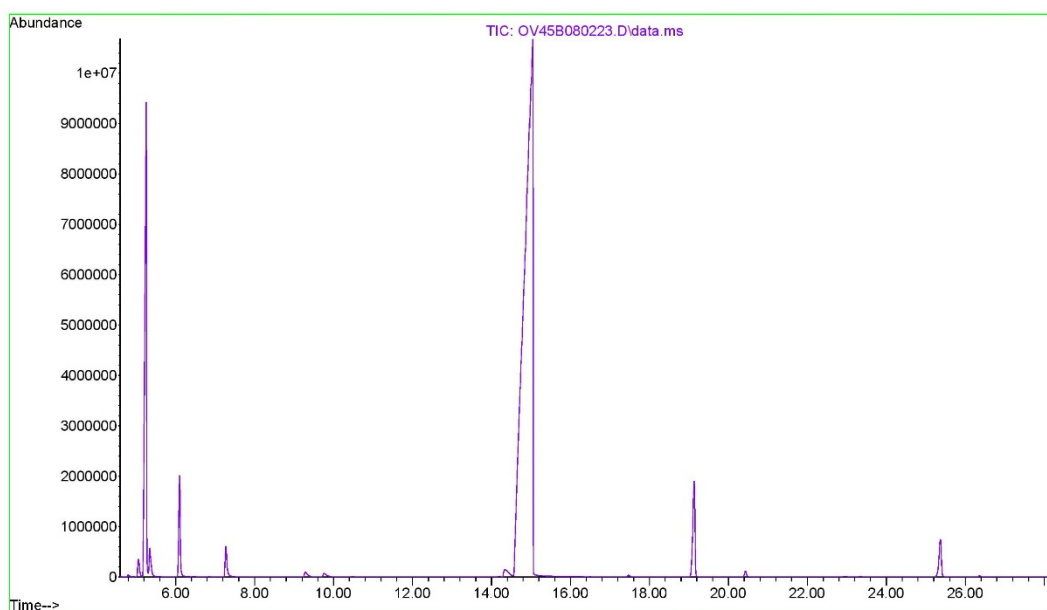


Figure 66 GC-MS chromatogram of *O. vulgare* after 20 days of storage

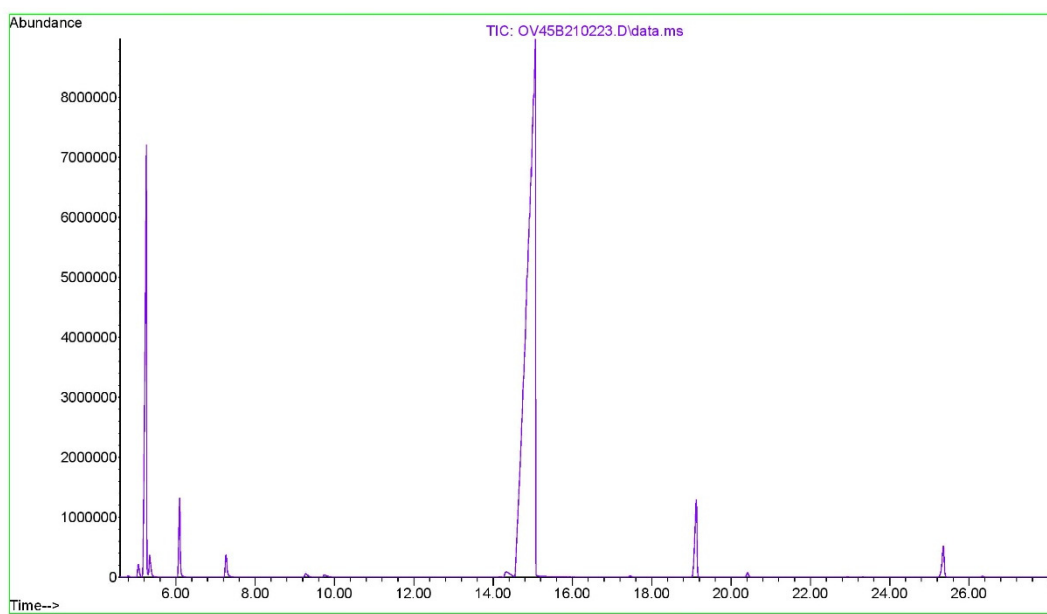


Figure 67 GC-MS chromatogram of *O. vulgare* after 30 days of storage

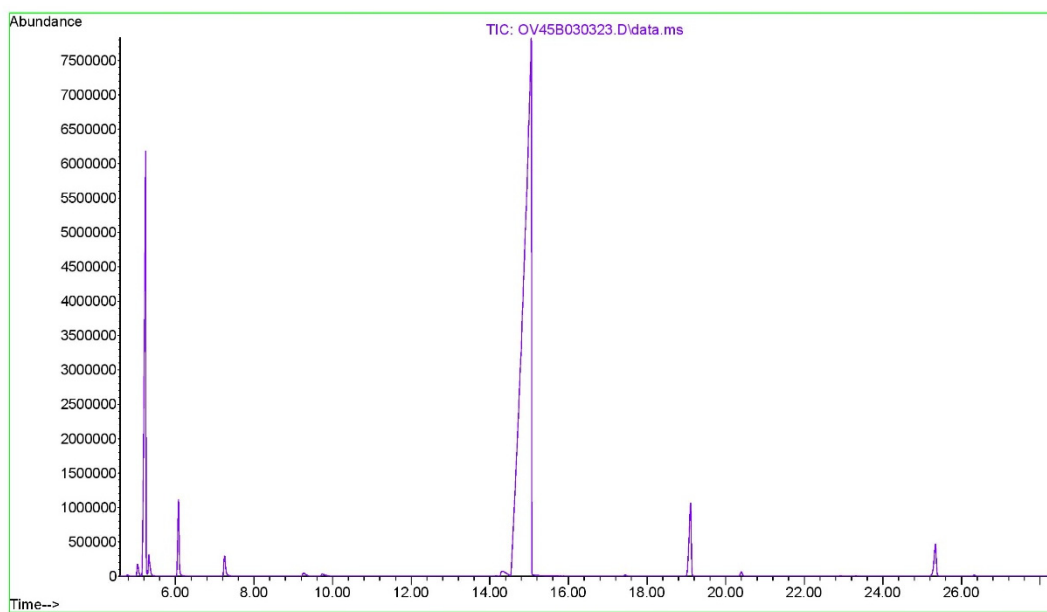


Figure 68 GC-MS chromatogram of *O. vulgare* after 40 days of storage

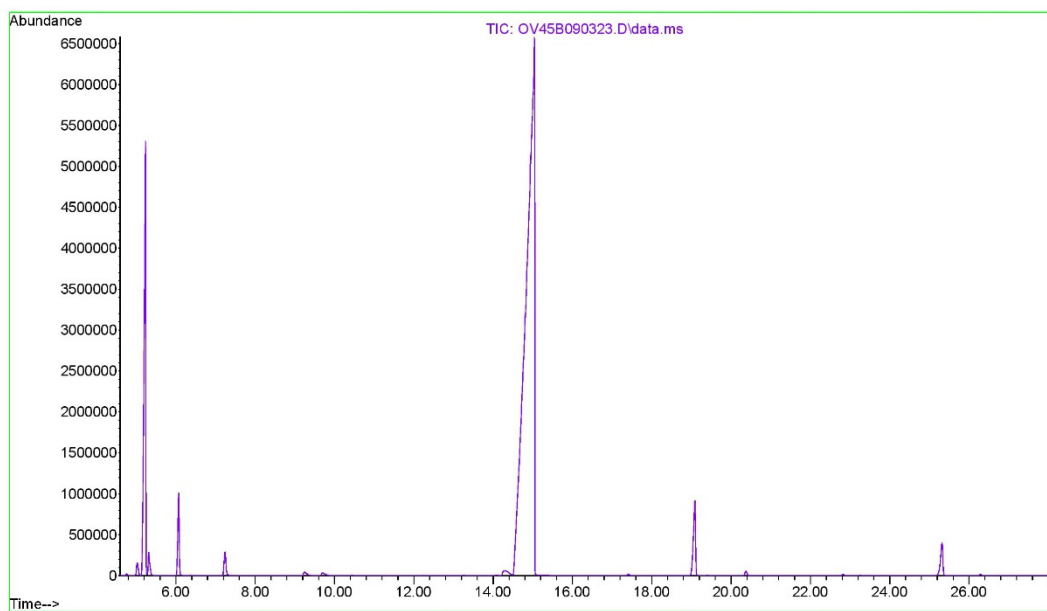


Figure 69 GC-MS chromatogram of *O. vulgare* after 50 days of storage

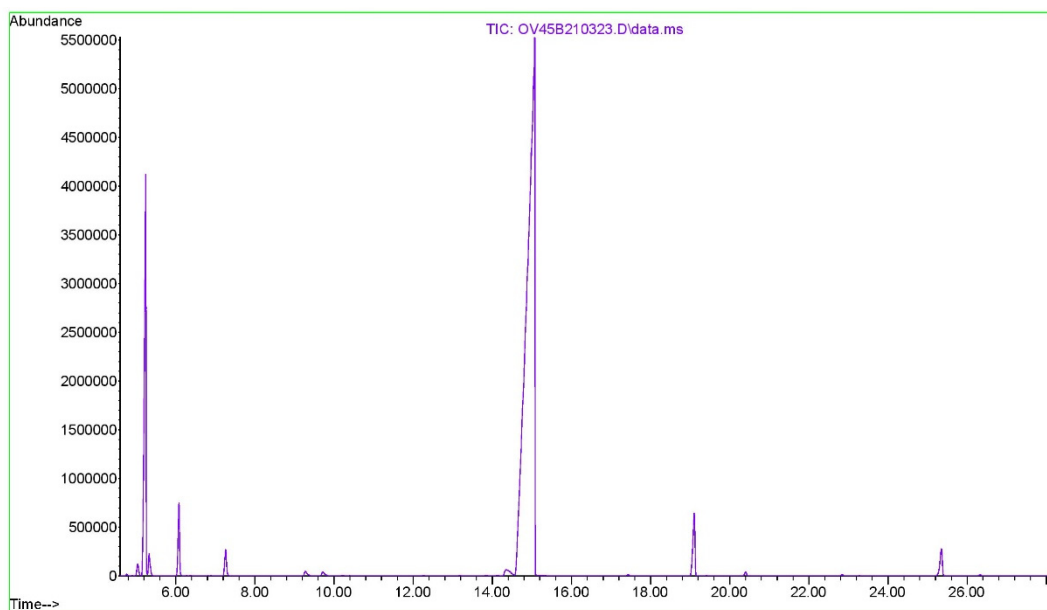


Figure 70 GC-MS chromatogram of *O. vulgare* after 60 days of storage

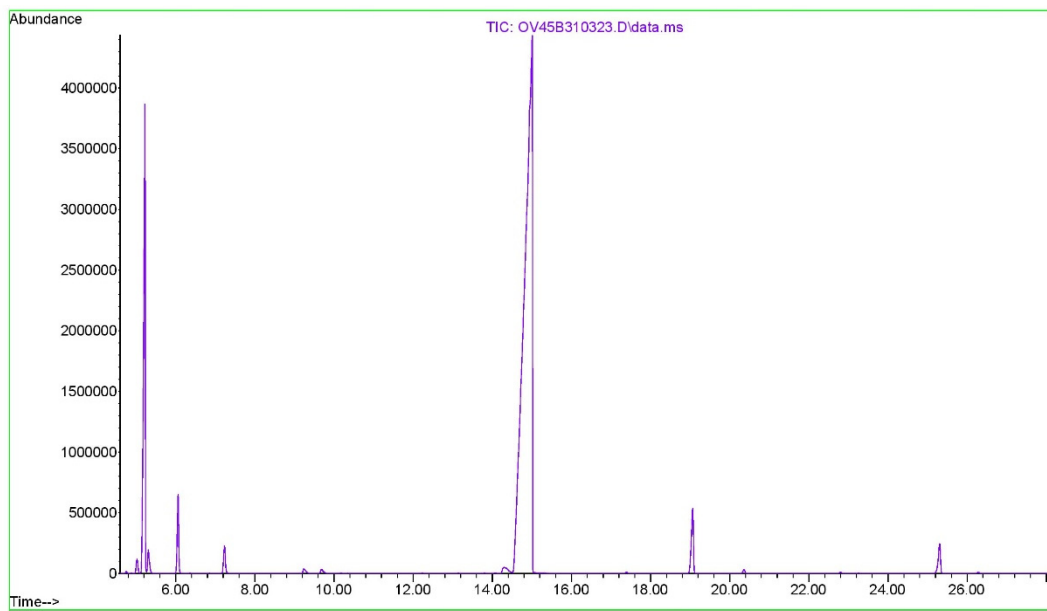


Figure 71 GC-MS chromatogram of *O. vulgare* after 70 days of storage

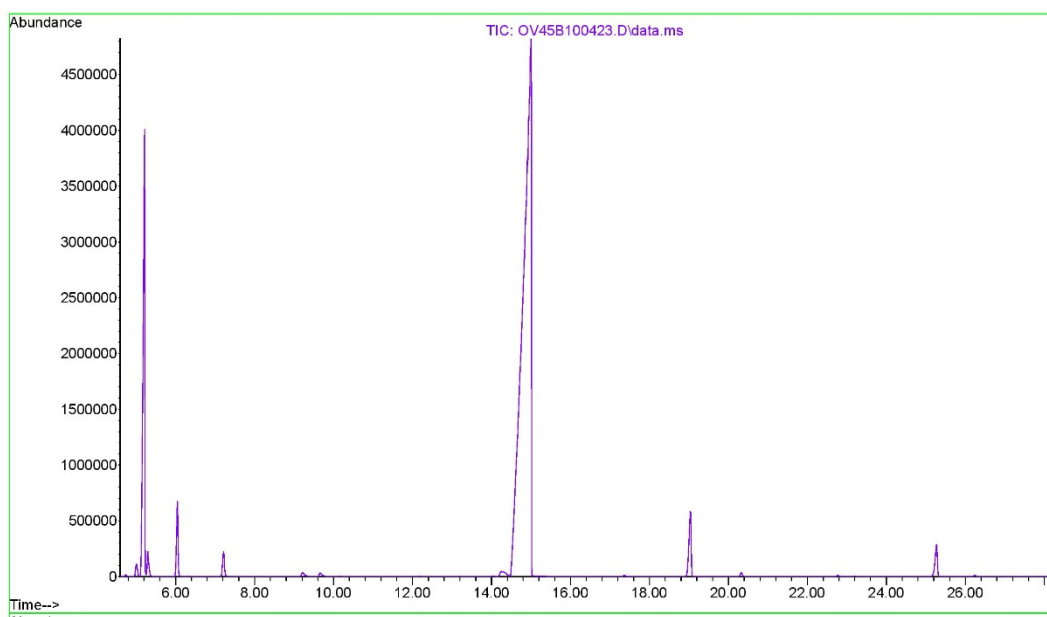


Figure 72 GC-MS chromatogram of *O. vulgare* after 80 days of storage

### 3.8. GC-MS chromatograms of the *O. vulgare* essential oil during storage in glass tubes sealed with cap at 4 °C for 6 months

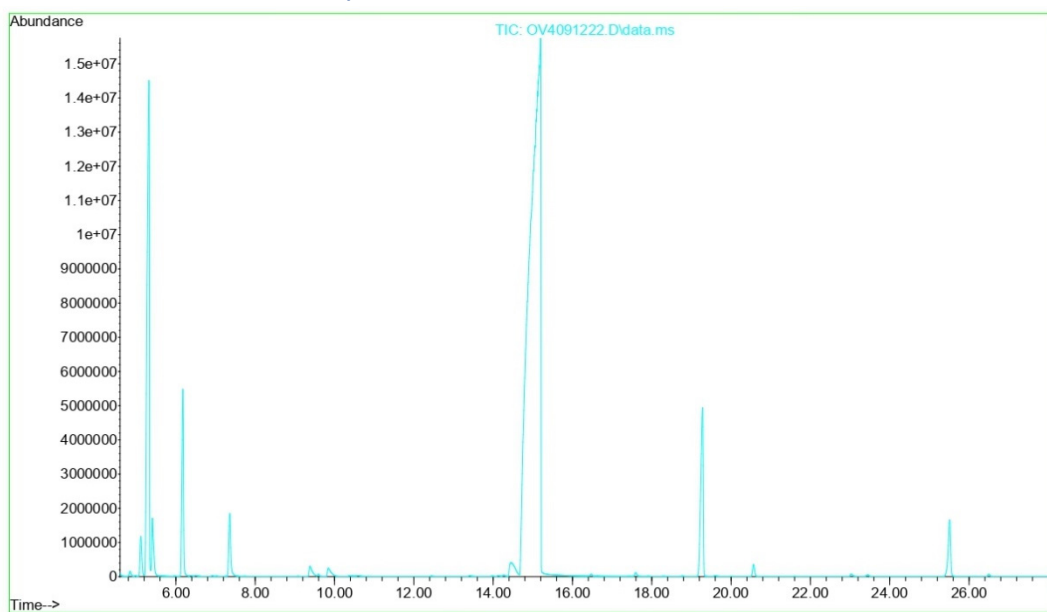


Figure 73 GC-MS chromatogram of *O. vulgare* after 30 days of storage

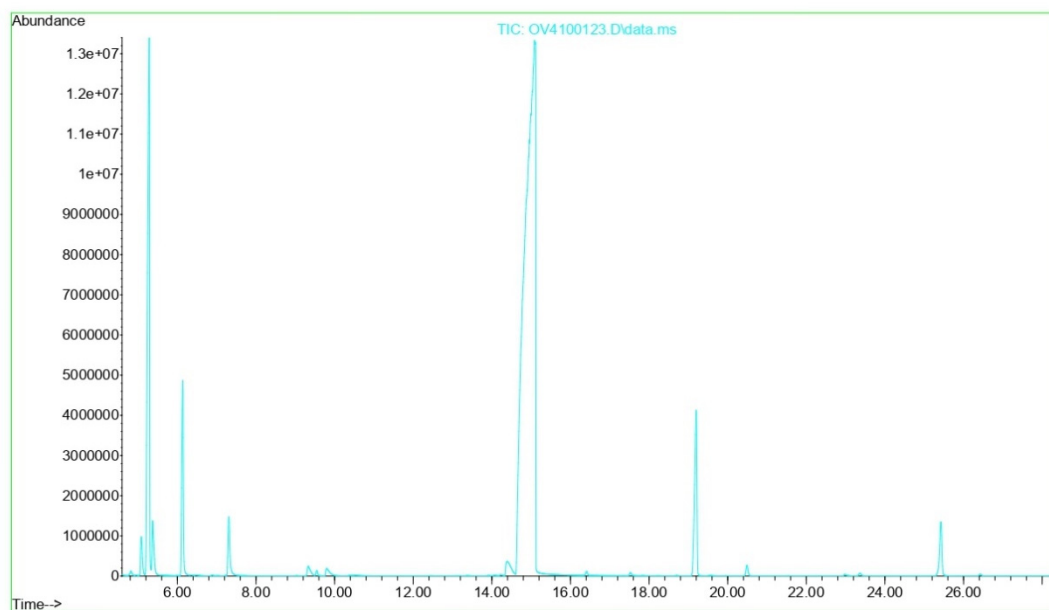


Figure 74 GC-MS chromatogram of *O. vulgare* after 60 days of storage

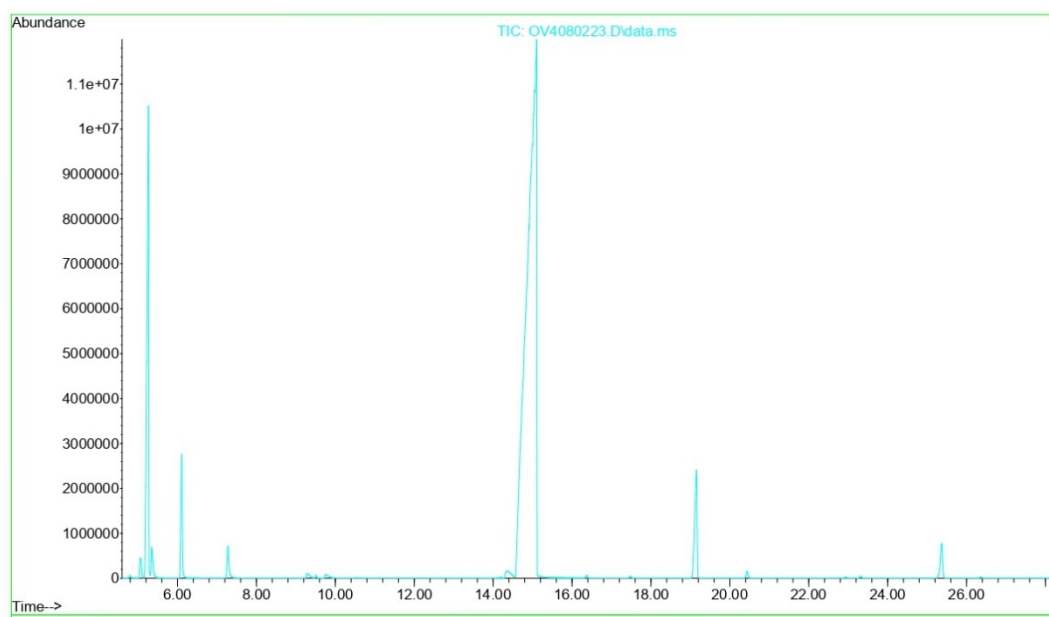


Figure 75 GC-MS chromatogram of *O. vulgare* after 90 days of storage

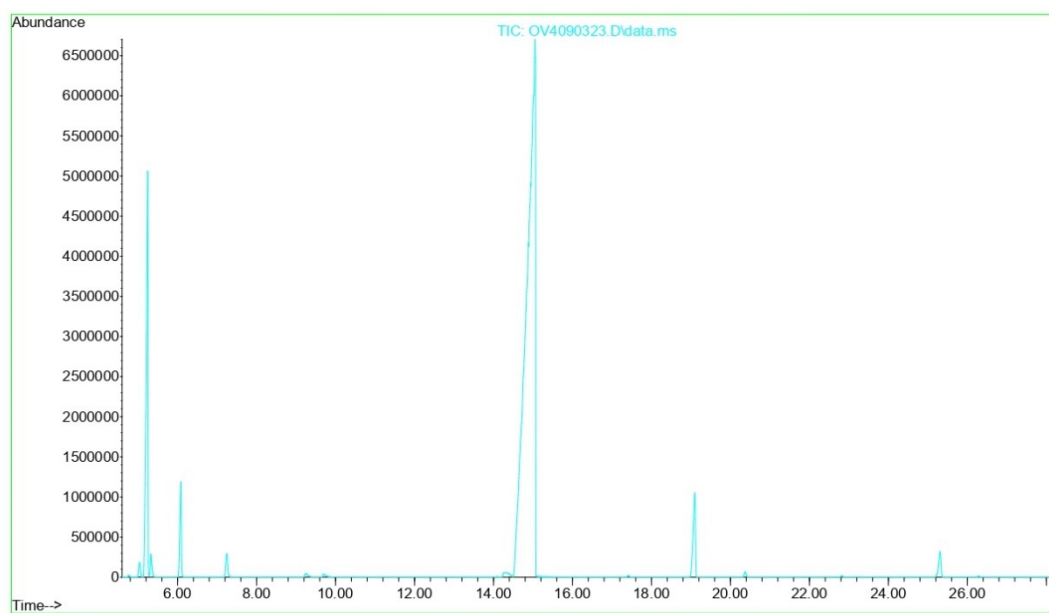


Figure 76 GC-MS chromatogram of *O. vulgare* after 120 days of storage

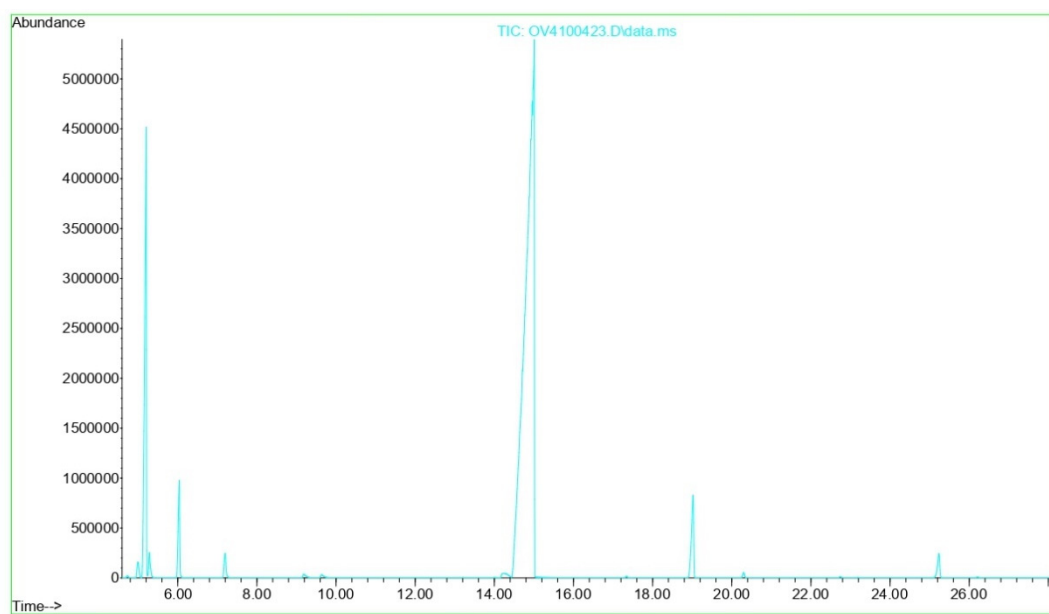


Figure 77 GC-MS chromatogram of *O. vulgare* after 150 days of storage

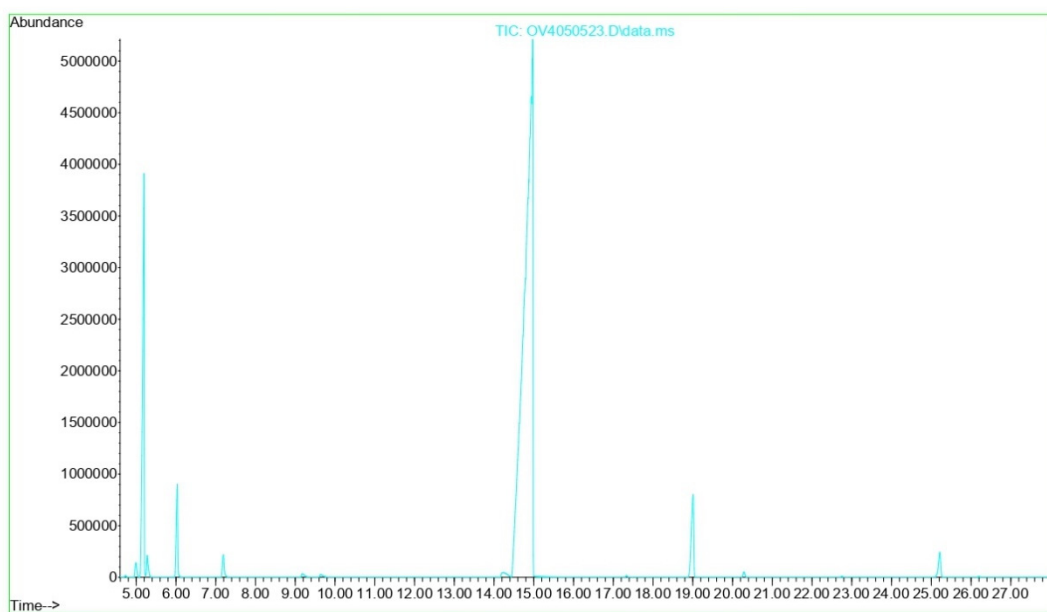


Figure 78 GC-MS chromatogram of *O. vulgare* after 180 days of storage

### 3.9. GC-MS chromatogram of the *O. vulgare* essential oil during storage in metal container at 4 °C for 6 months

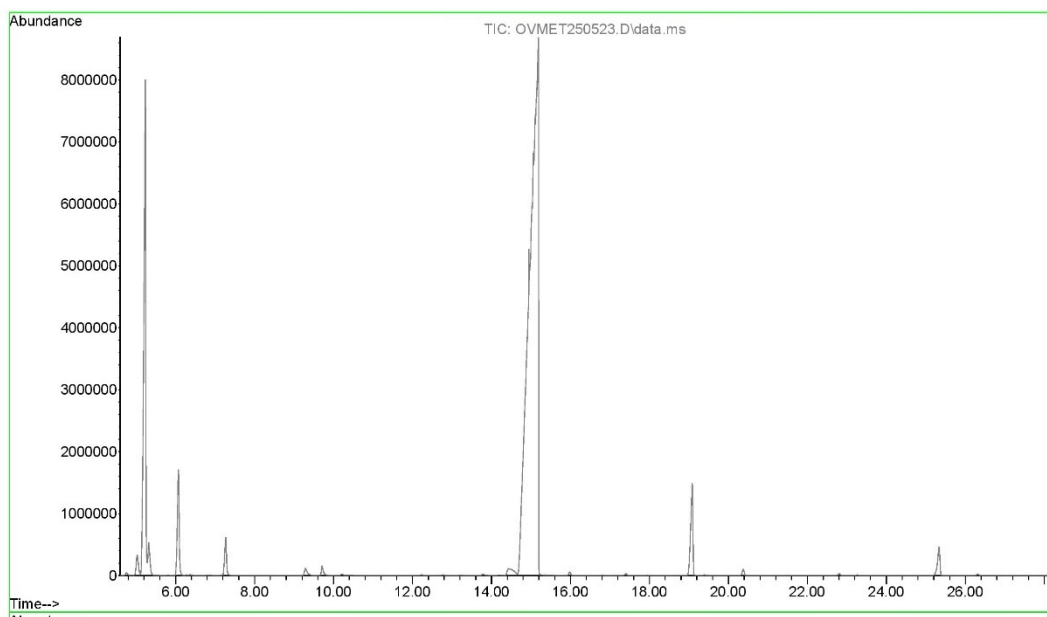


Figure 79 GC-MS chromatogram of *O. vulgare* after 180 days of storage

### 3.10. GC-MS chromatogram of the *O. vulgare* essential oil during storage in sealed glass ampoules at 4 °C for 6 months

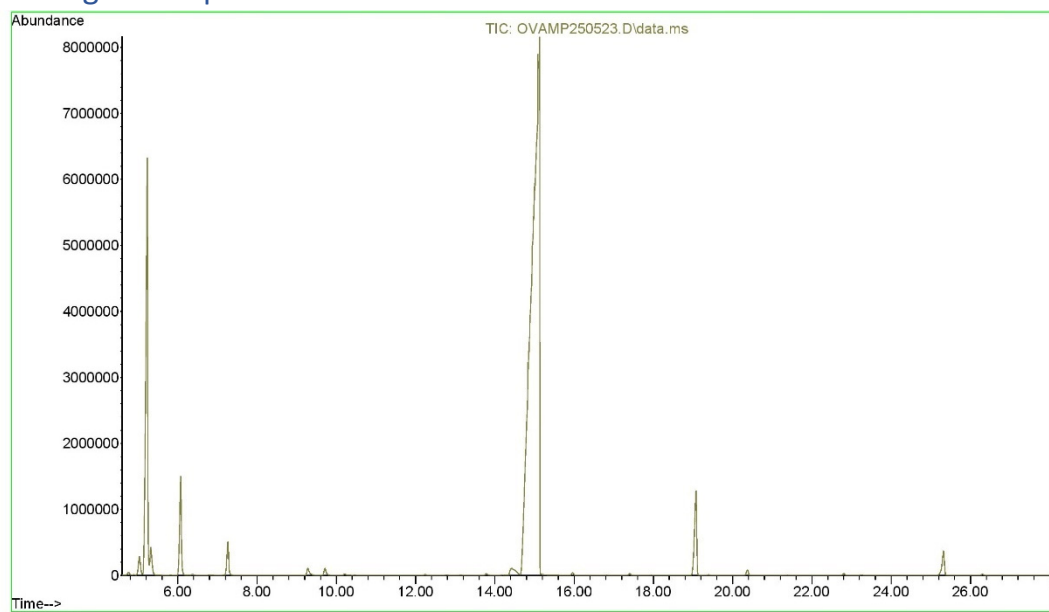


Figure 80 GC-MS chromatogram of *O. vulgare* after 180 days of storage

### 3.11. GC-MS chromatogram of the *O. vulgare* essential oil during storage in glass tubes sealed with cap at -20 °C for 6 months

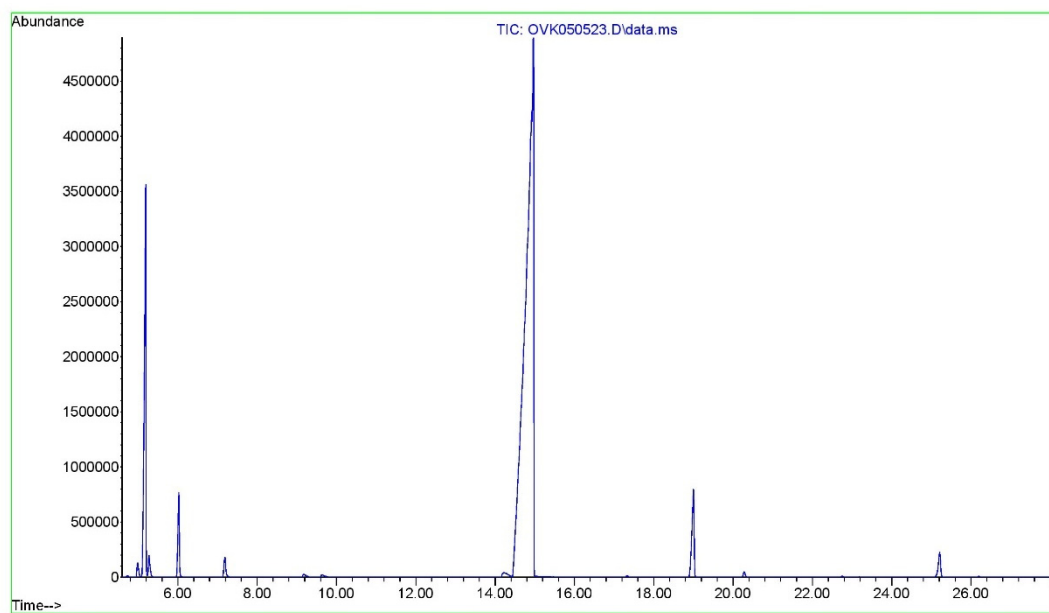


Figure 81 GC-MS chromatogram of *O. vulgare* after 180 days of storage

## 4. GC-MS chromatograms of the *Thymus vulgaris* L. essential oil

### 4.1. GC-MS chromatogram of the initial *T. vulgaris* essential oil

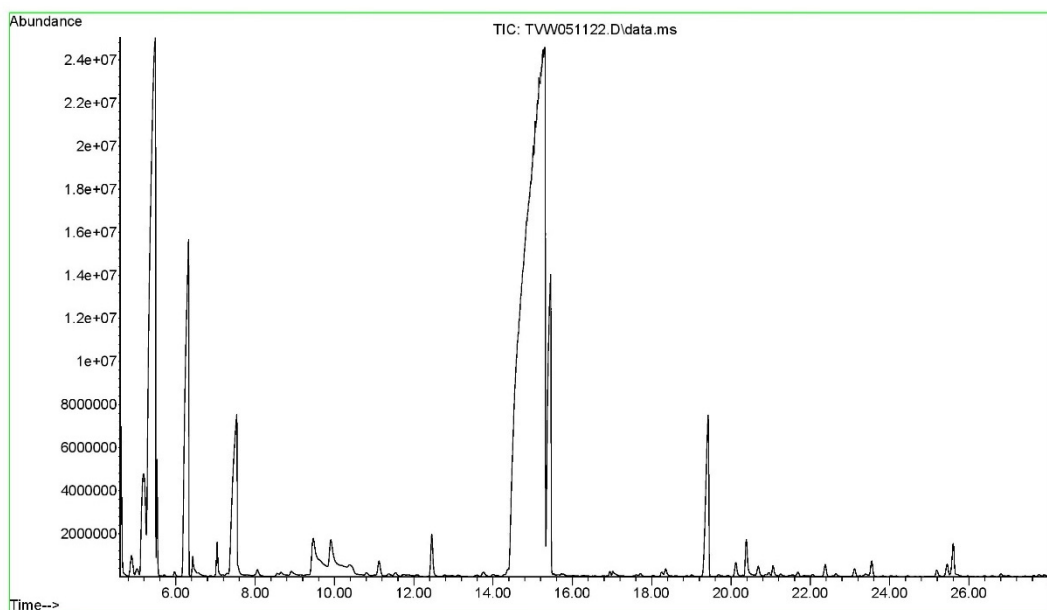


Figure 82 GC-MS chromatogram of *T. vulgaris* before storage

### 4.2. GC-MS chromatograms of the *T. vulgaris* essential oil during storage in glass tubes sealed with cap at room temperature (23 °C) under darkness for 6 months

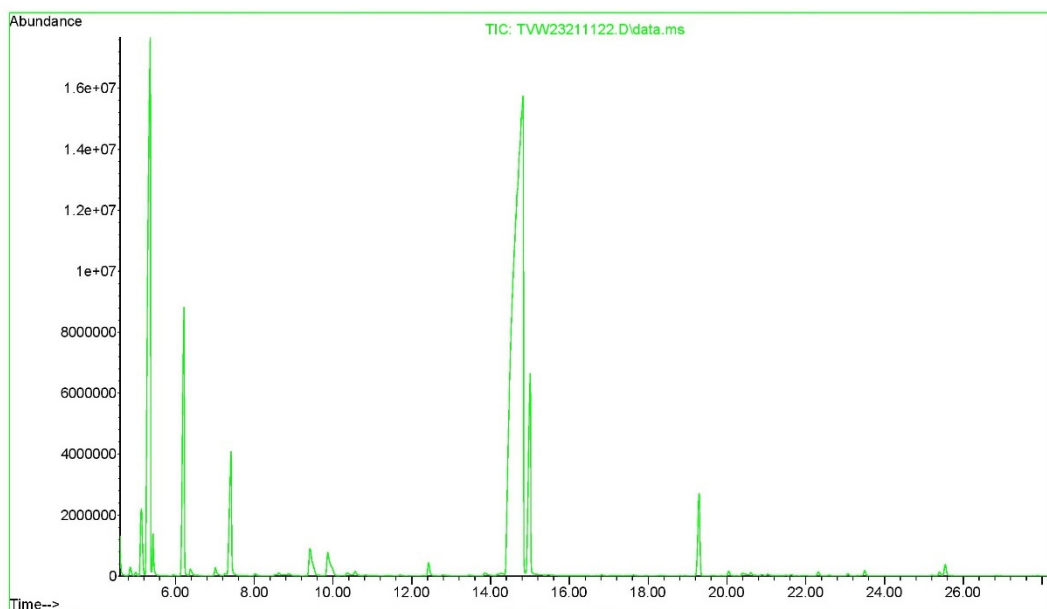


Figure 83 GC-MS chromatogram of *T. vulgaris* after 10 days of storage

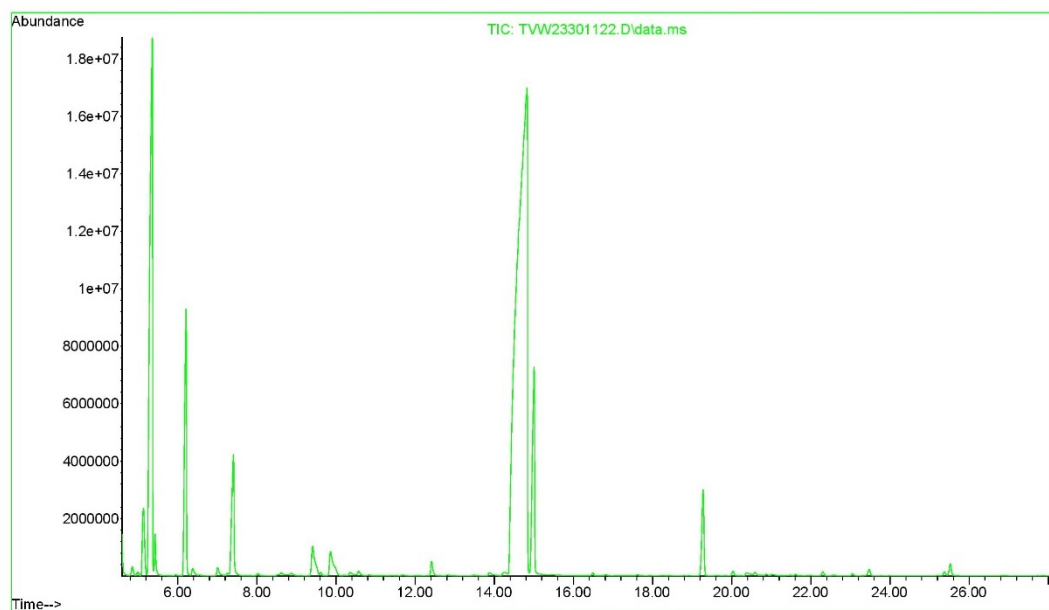


Figure 84 GC-MS chromatogram of *T. vulgaris* after 20 days of storage

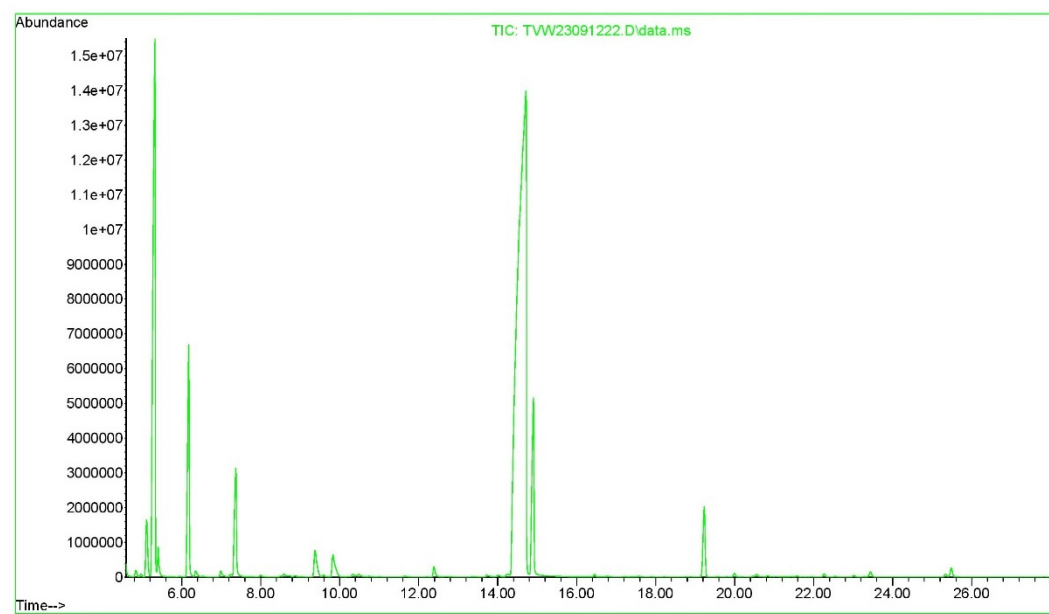


Figure 85 GC-MS chromatogram of *T. vulgaris* after 30 days of storage

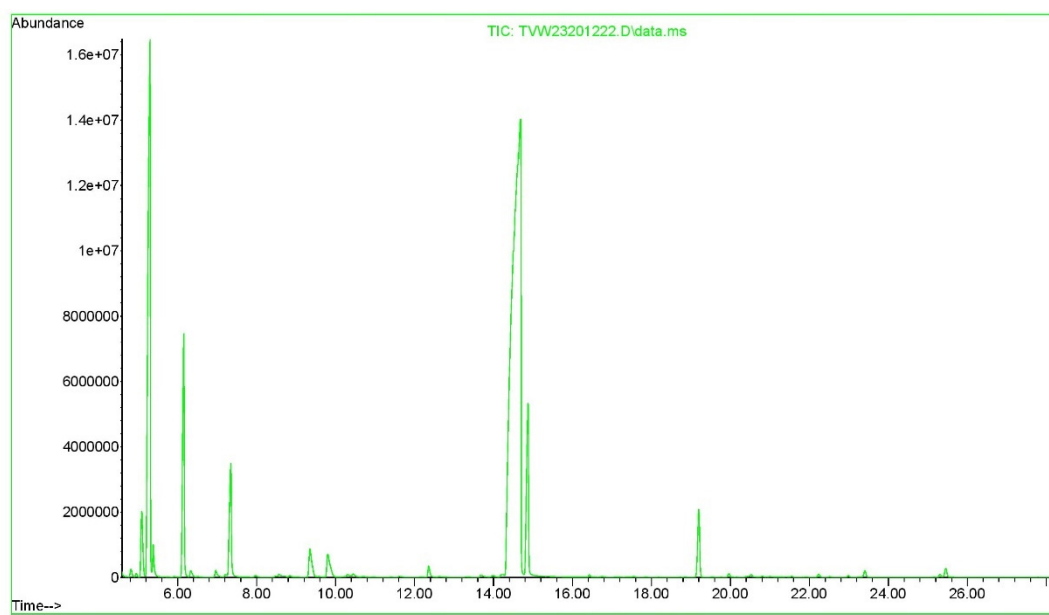


Figure 86 GC-MS chromatogram of *T. vulgaris* after 40 days of storage

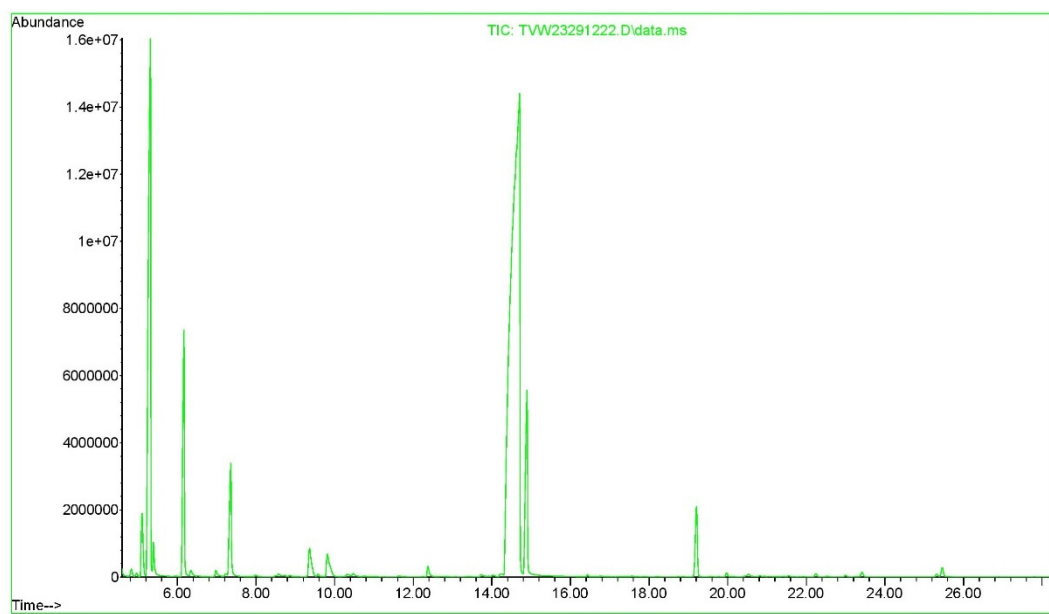


Figure 87 GC-MS chromatogram of *T. vulgaris* after 50 days of storage

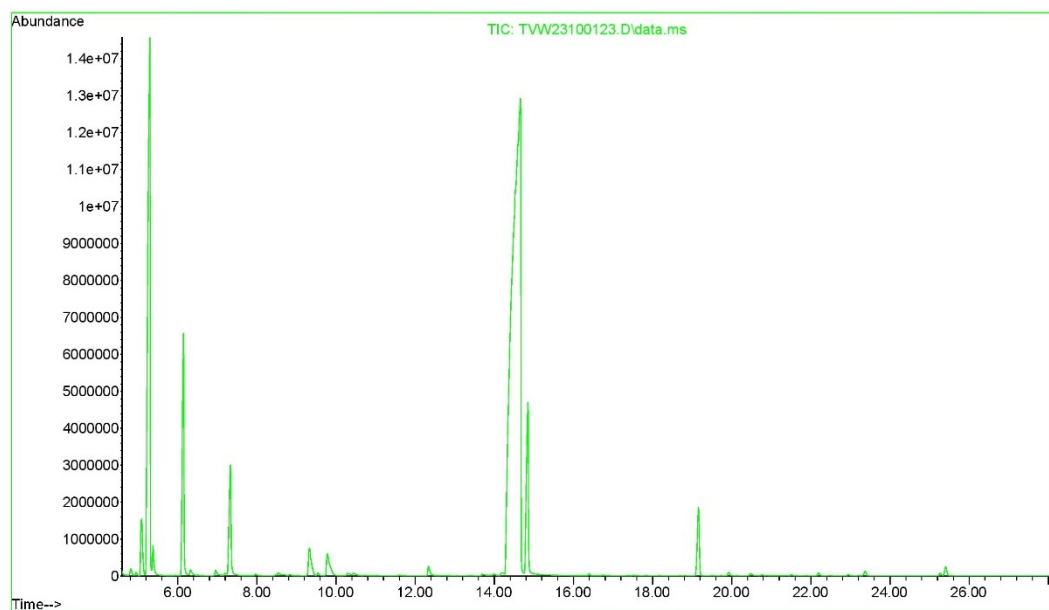


Figure 88 GC-MS chromatogram of *T. vulgaris* after 60 days of storage

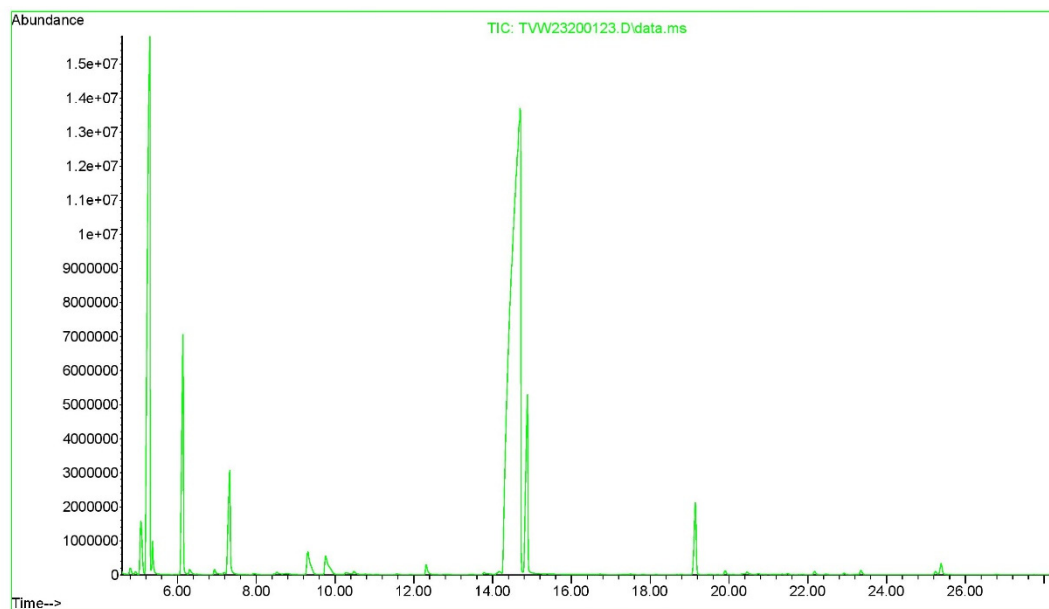


Figure 89 GC-MS chromatogram of *T. vulgaris* after 70 days of storage

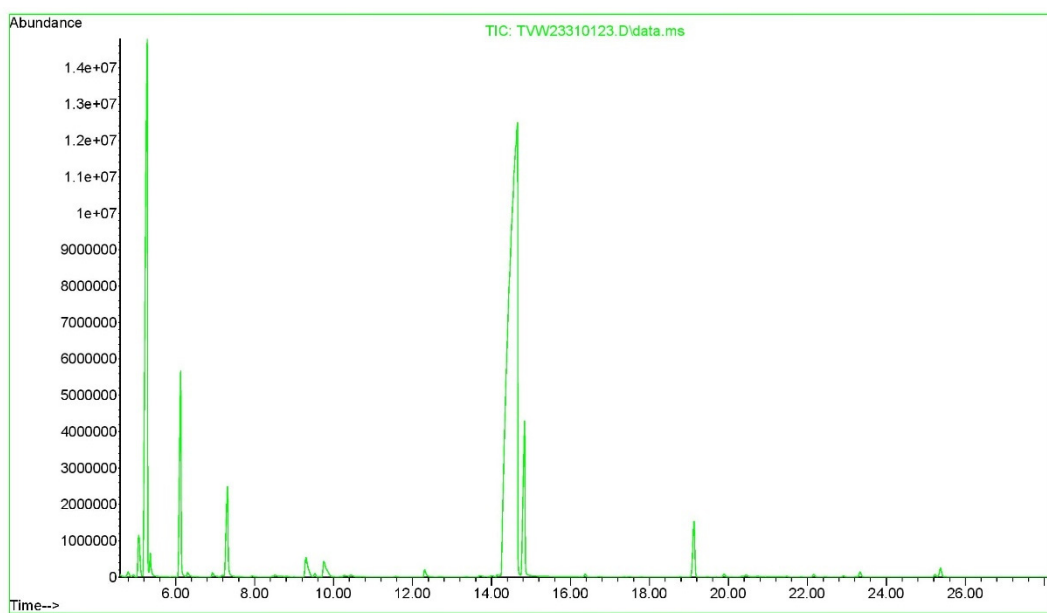


Figure 90 GC-MS chromatogram of *T. vulgaris* after 80 days of storage

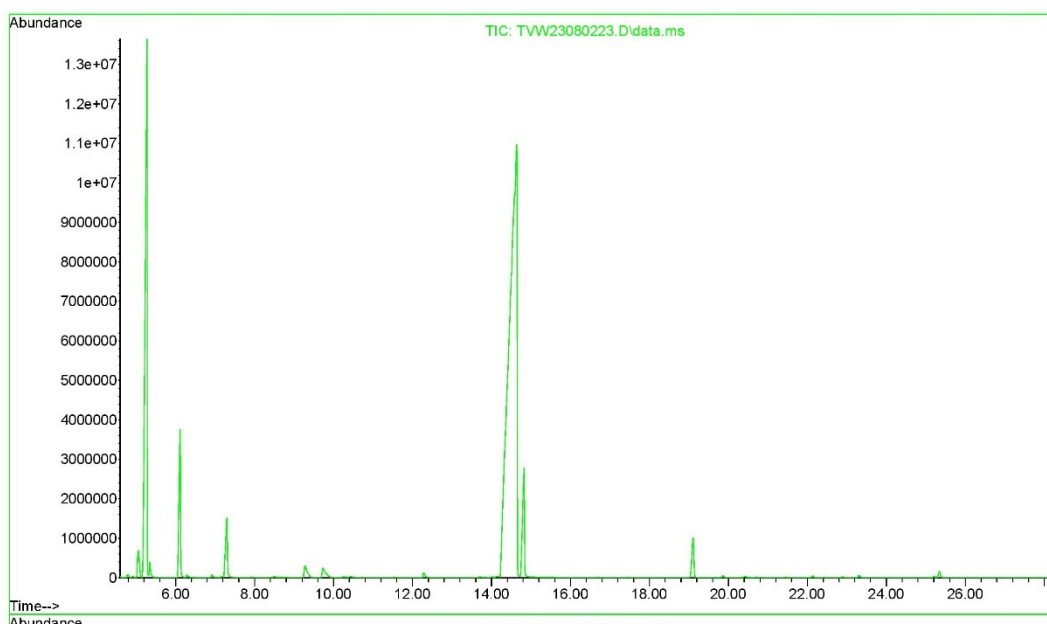


Figure 91 GC-MS chromatogram of *T. vulgaris* after 90 days of storage

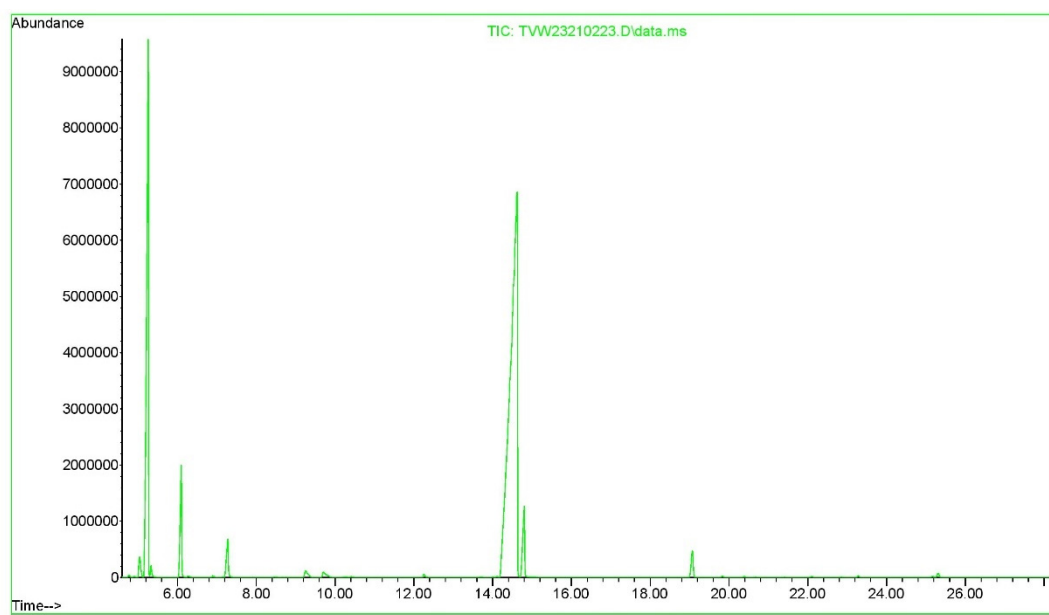


Figure 92 GC-MS chromatogram of *T. vulgaris* after 100 days of storage

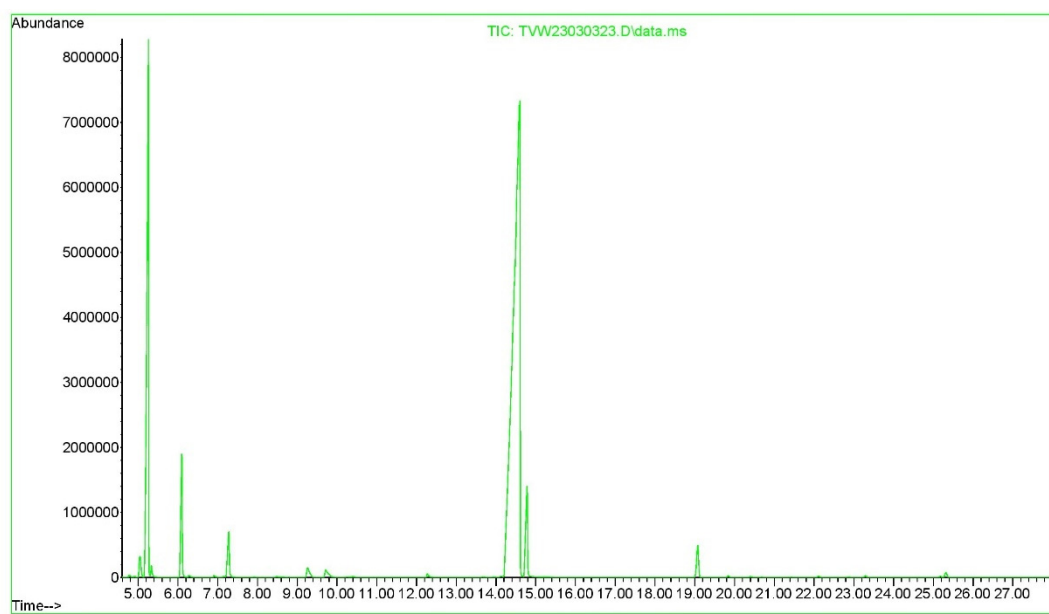


Figure 93 GC-MS chromatogram of *T. vulgaris* after 110 days of storage

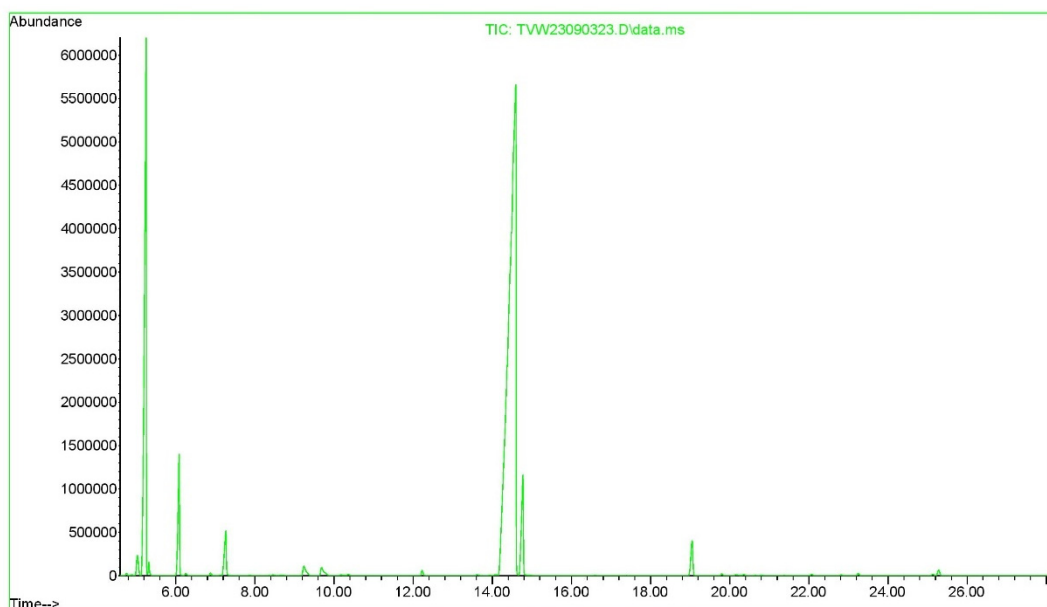


Figure 94 GC-MS chromatogram of *T. vulgaris* after 120 days of storage

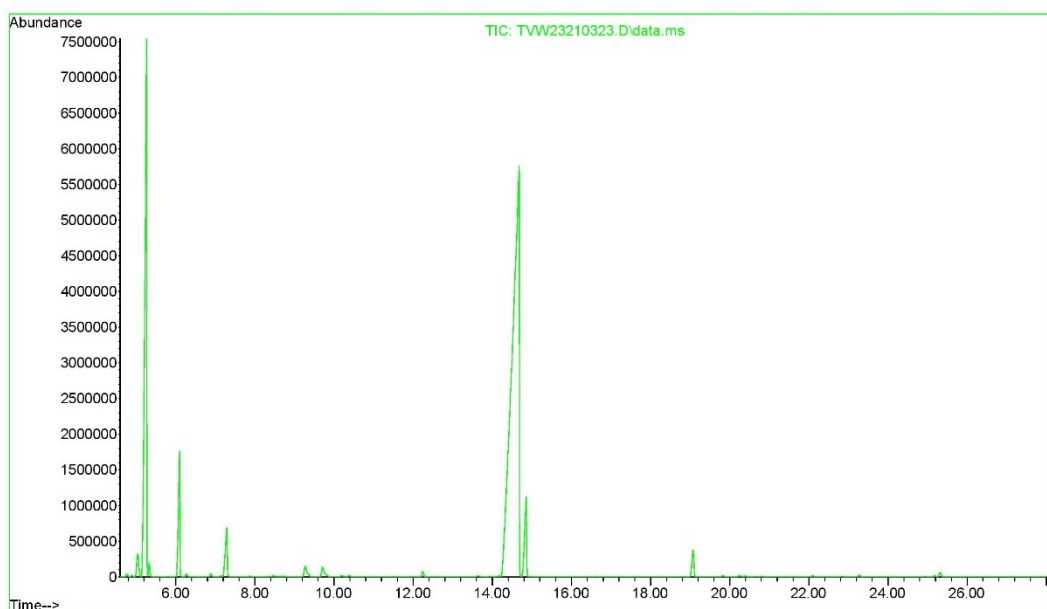


Figure 95 GC-MS chromatogram of *T. vulgaris* after 130 days of storage

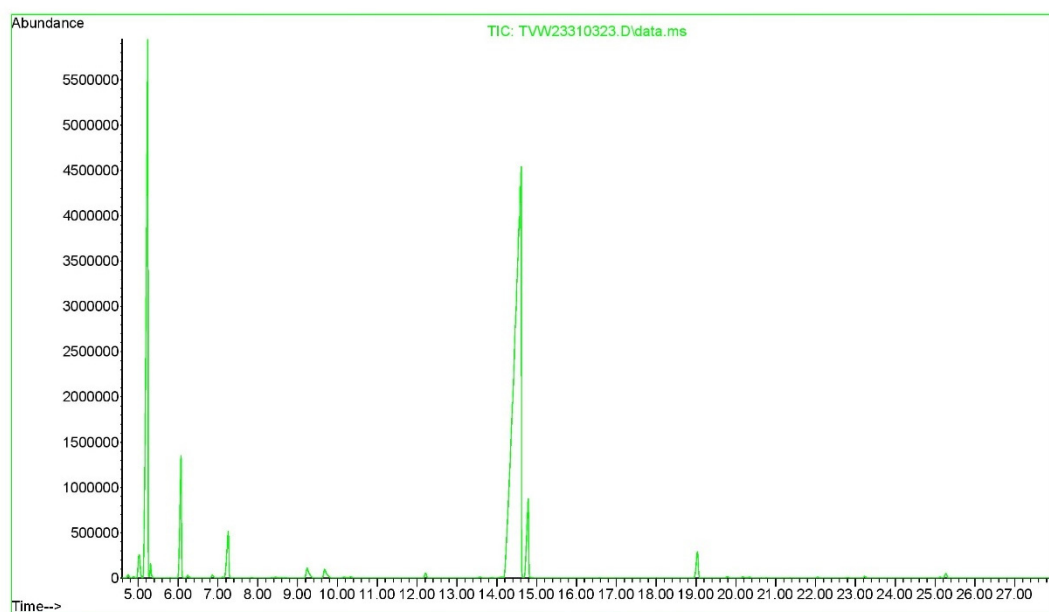


Figure 96 GC-MS chromatogram of *T. vulgaris* after 140 days of storage

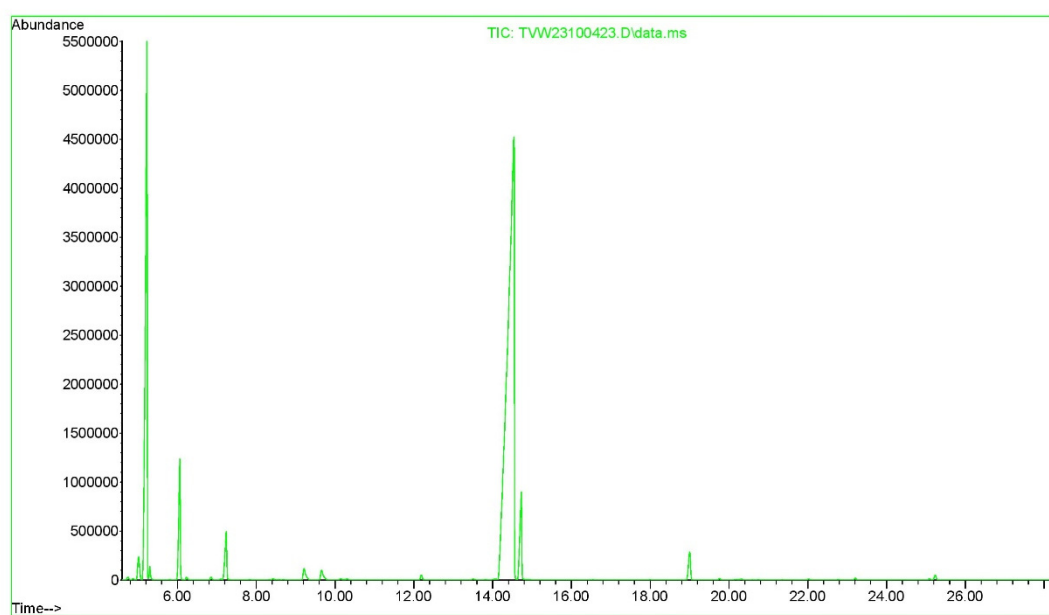


Figure 97 GC-MS chromatogram of *T. vulgaris* after 150 days of storage

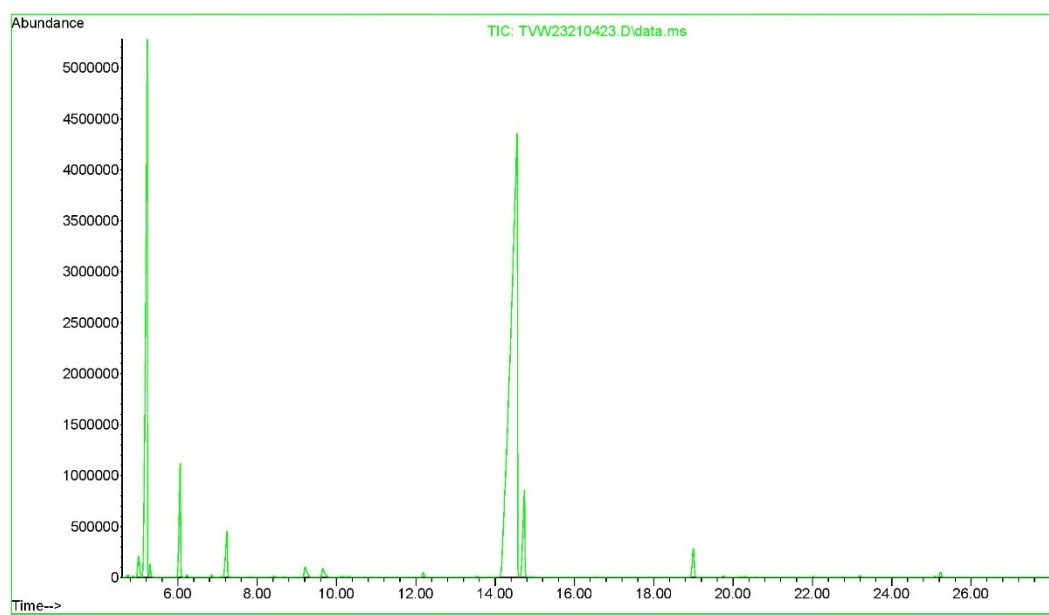


Figure 98 GC-MS chromatogram of *T. vulgaris* after 160 days of storage

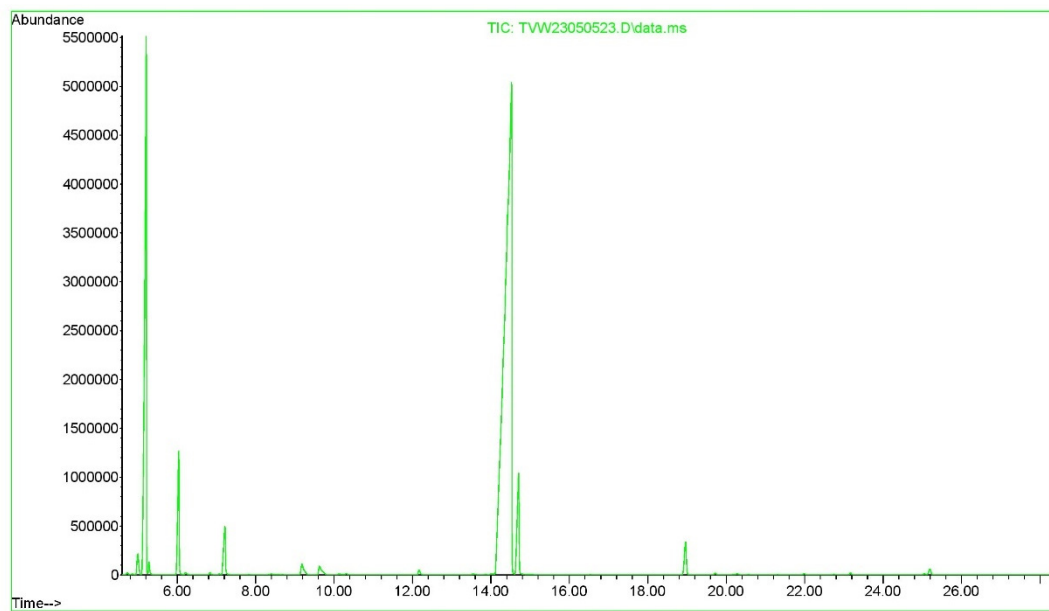


Figure 99 GC-MS chromatogram of *T. vulgaris* after 170 days of storage

#### 4.3. GC-MS chromatograms of the *T. vulgaris* essential oil during storage in glass tubes sealed with cap under direct sunlight exposure for 6 months

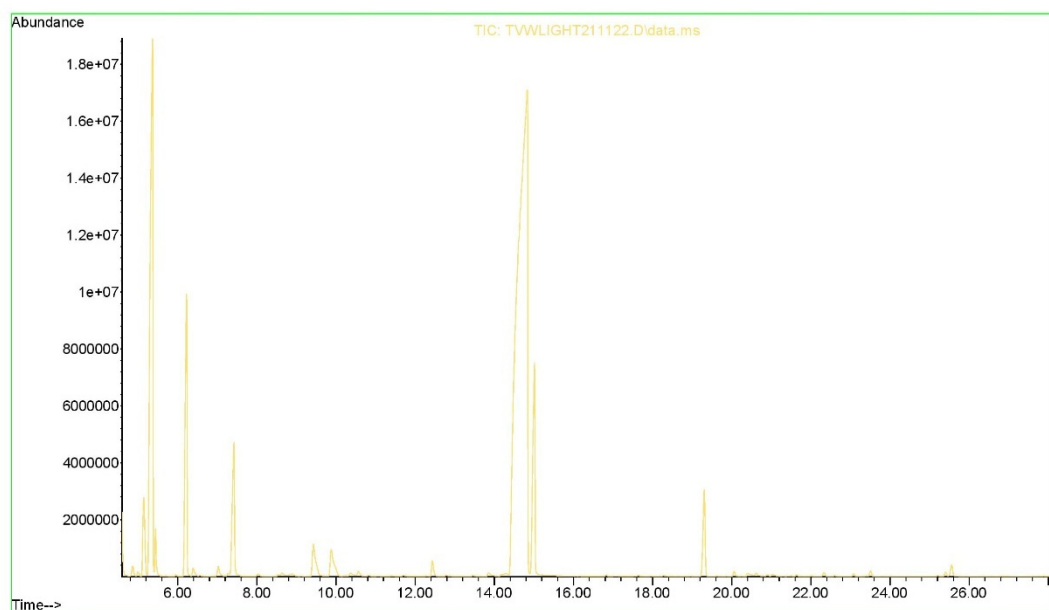


Figure 100 GC-MS chromatogram of *T. vulgaris* after 10 days of storage

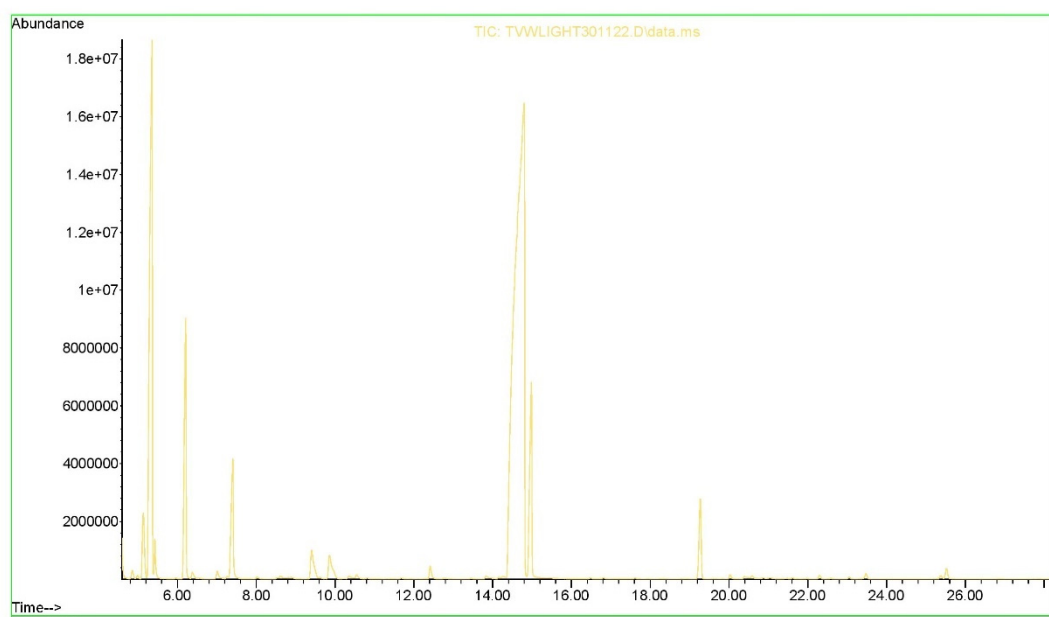


Figure 101 GC-MS chromatogram of *T. vulgaris* after 20 days of storage

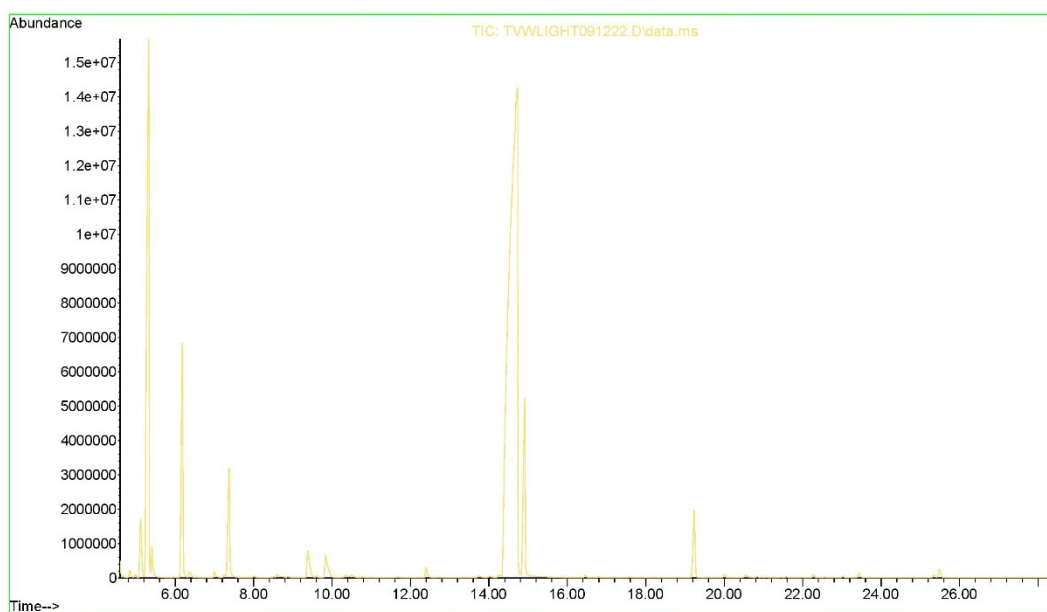


Figure 102 GC-MS chromatogram of *T. vulgaris* after 30 days of storage

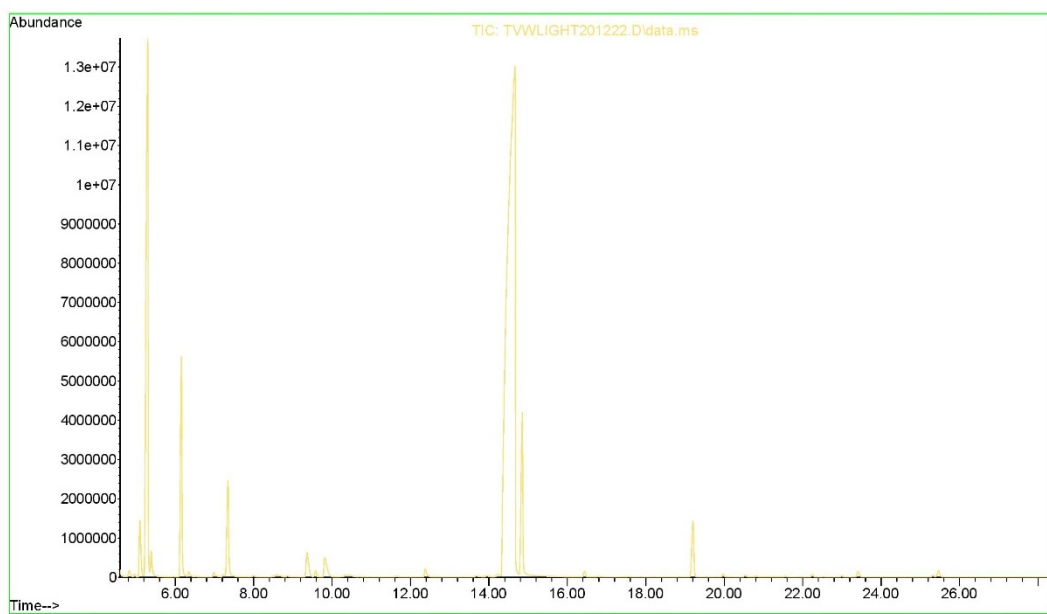


Figure 103 GC-MS chromatogram of *T. vulgaris* after 40 days of storage

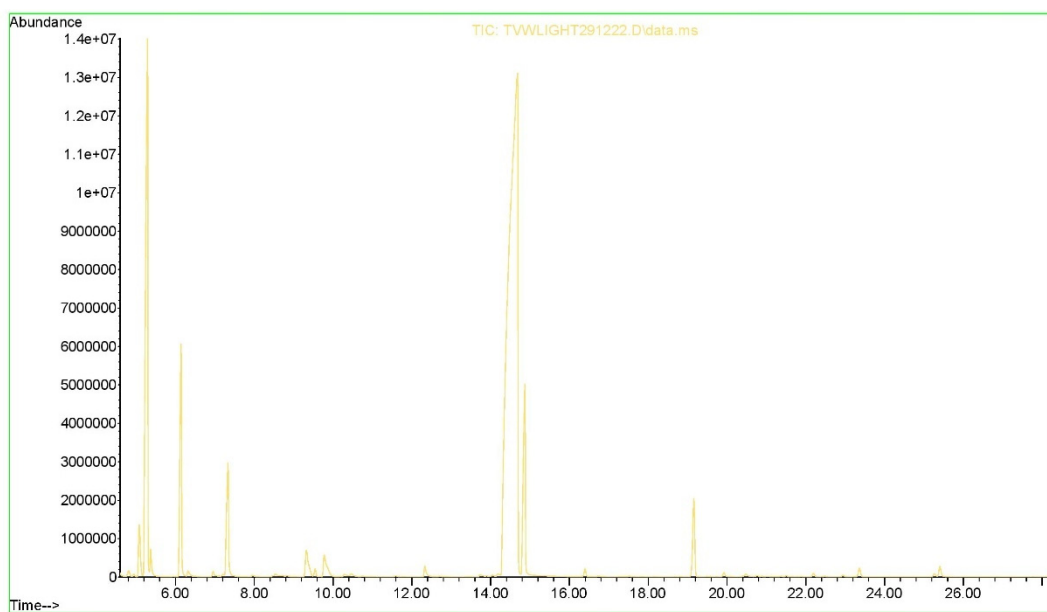


Figure 104 GC-MS chromatogram of *T. vulgaris* after 50 days of storage

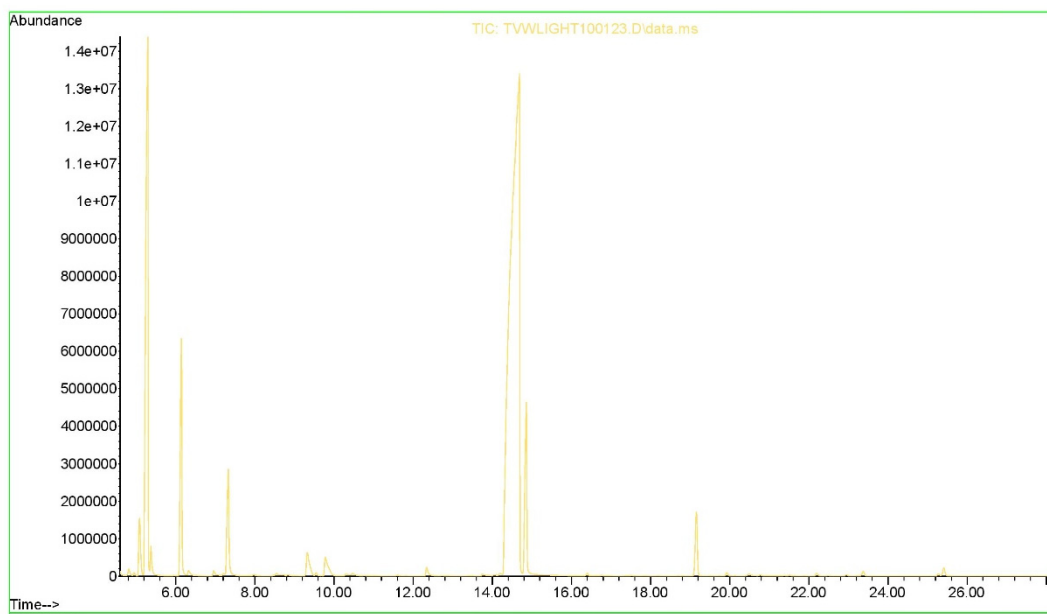


Figure 105 GC-MS chromatogram of *T. vulgaris* after 60 days of storage

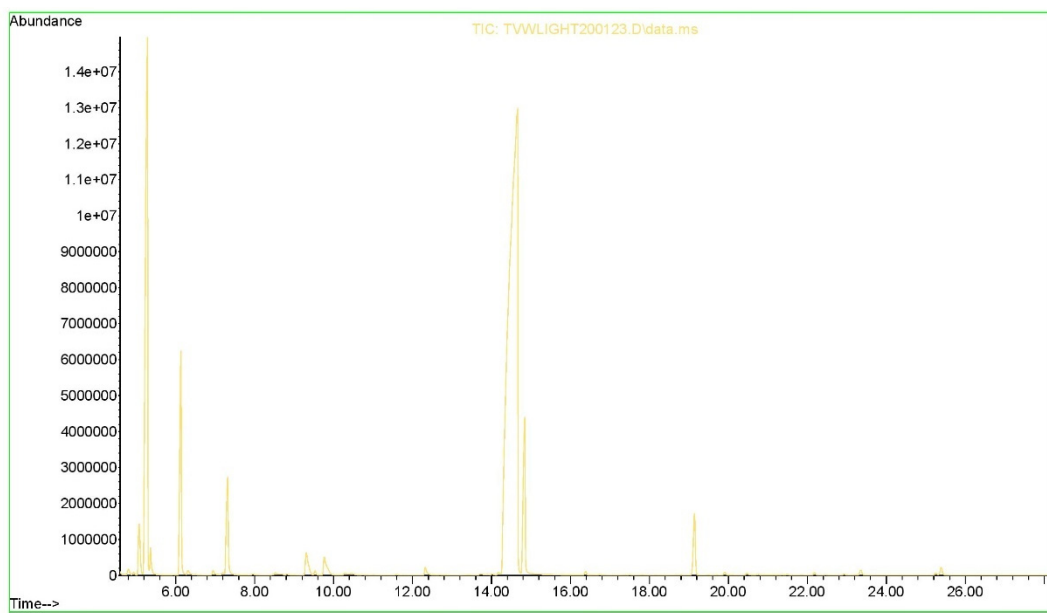


Figure 106 GC-MS chromatogram of *T. vulgaris* after 70 days of storage

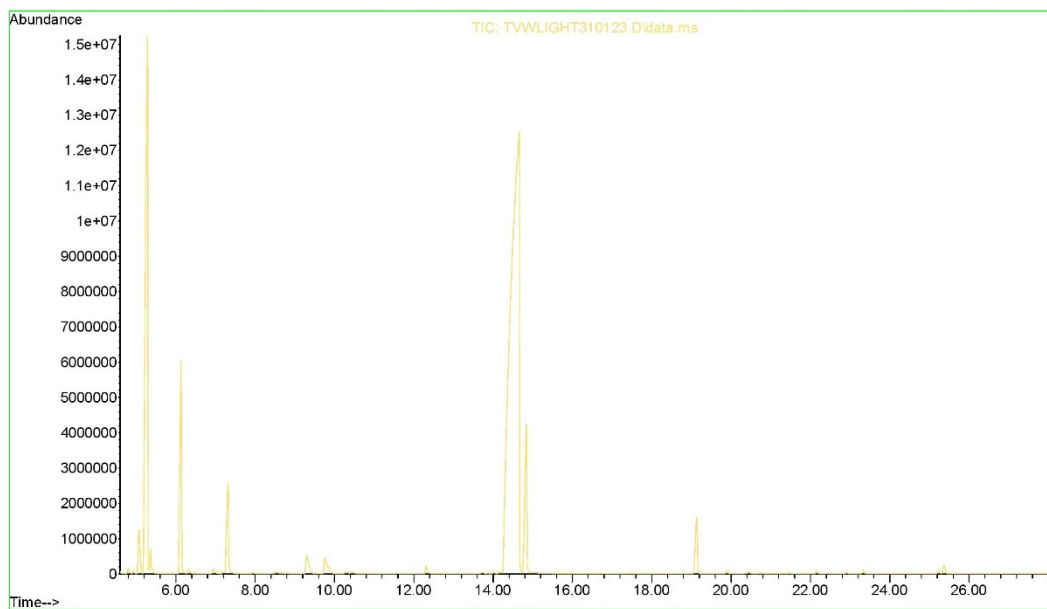


Figure 107 GC-MS chromatogram of *T. vulgaris* after 80 days of storage

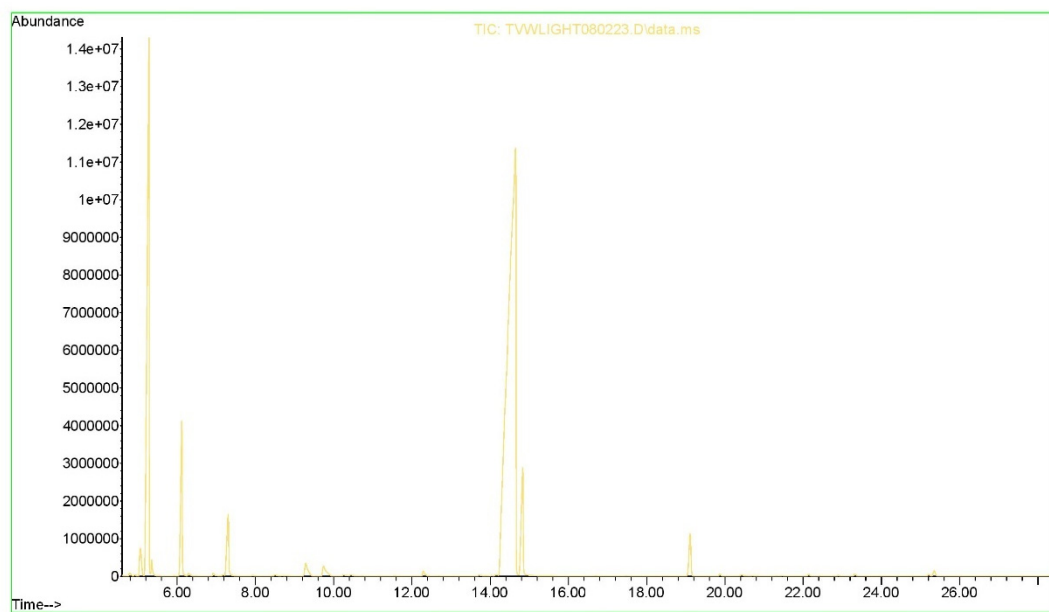


Figure 108 GC-MS chromatogram of *T. vulgaris* after 90 days of storage

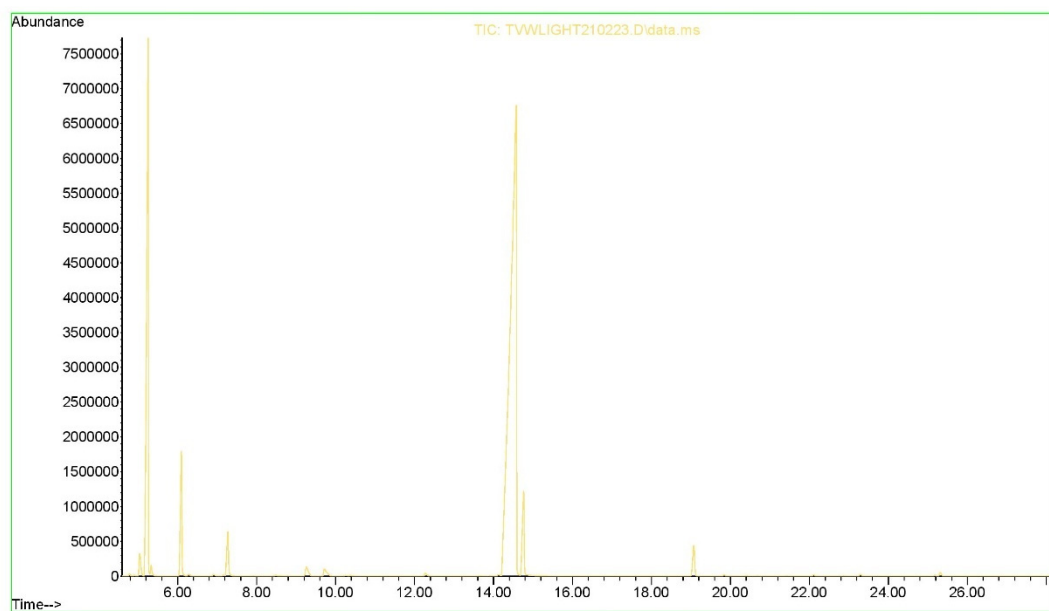


Figure 109 GC-MS chromatogram of *T. vulgaris* after 100 days of storage

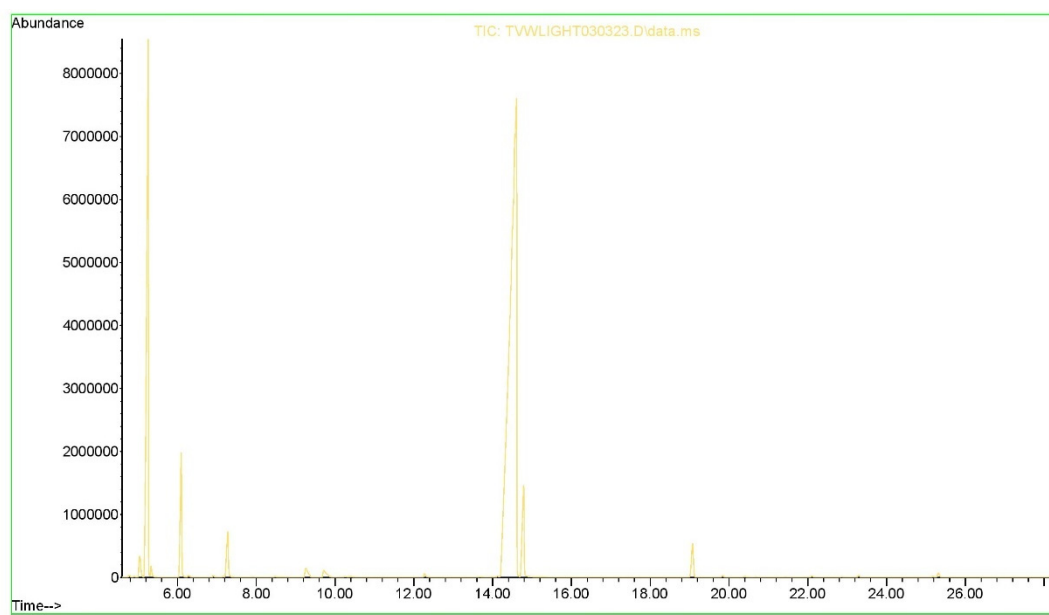


Figure 110 GC-MS chromatogram of *T. vulgaris* after 110 days of storage

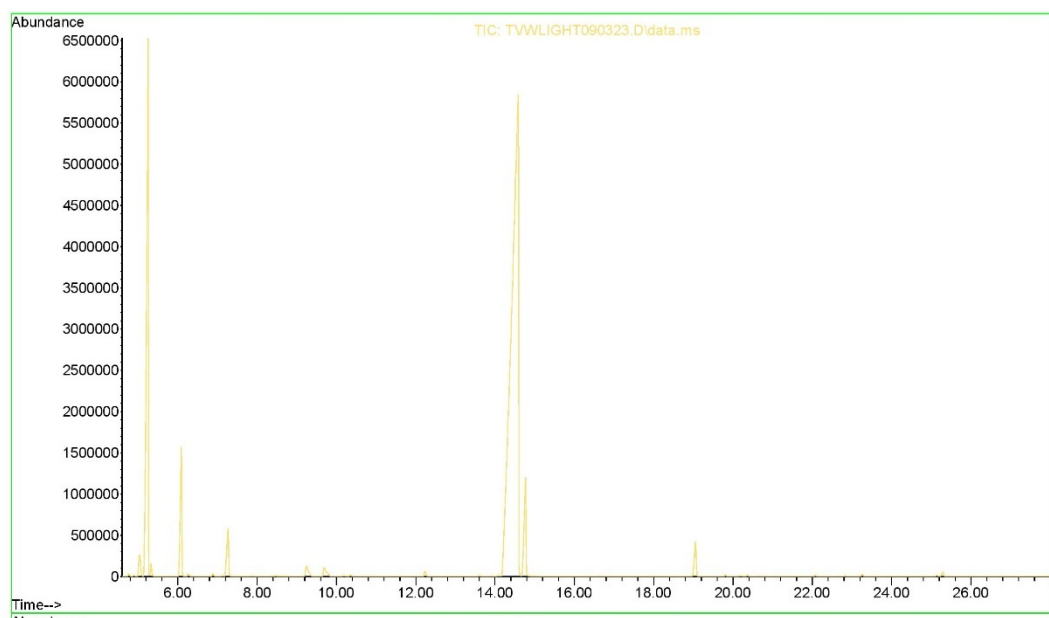


Figure 111 GC-MS chromatogram of *T. vulgaris* after 120 days of storage

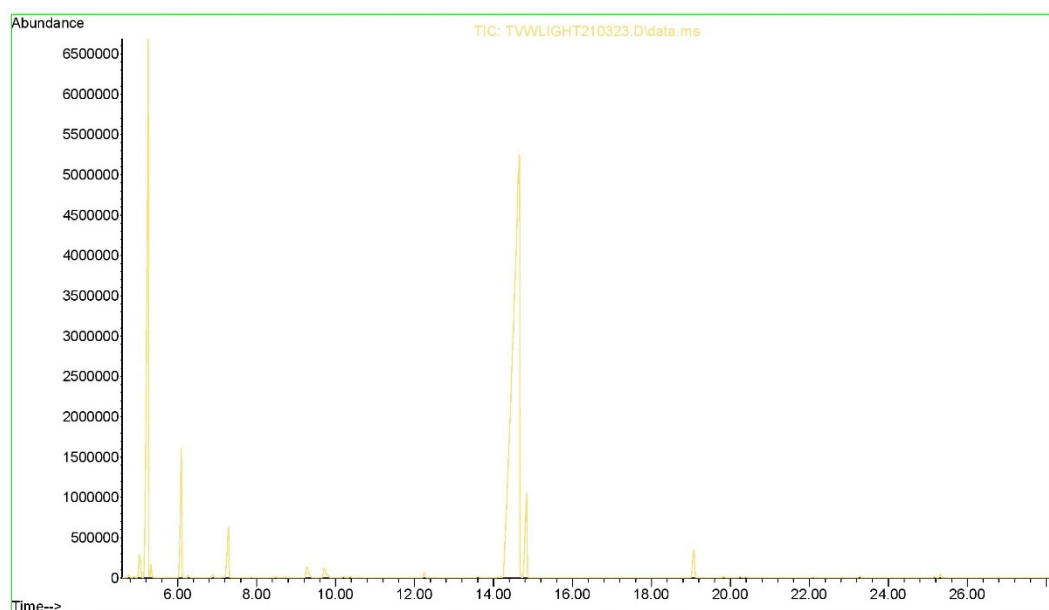


Figure 112 GC-MS chromatogram of *T. vulgaris* after 130 days of storage

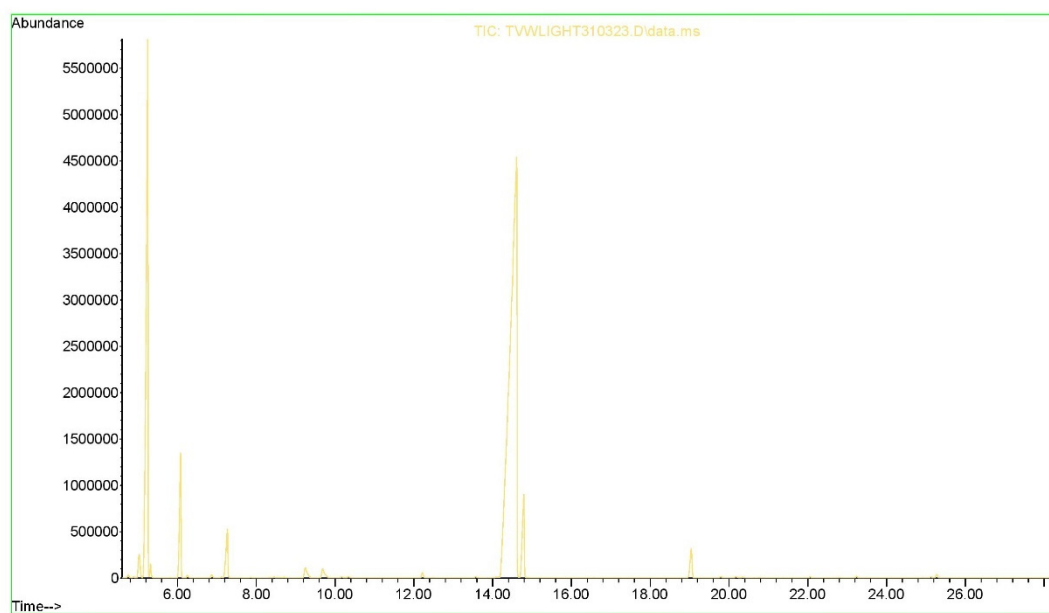


Figure 113 GC-MS chromatogram of *T. vulgaris* after 140 days of storage

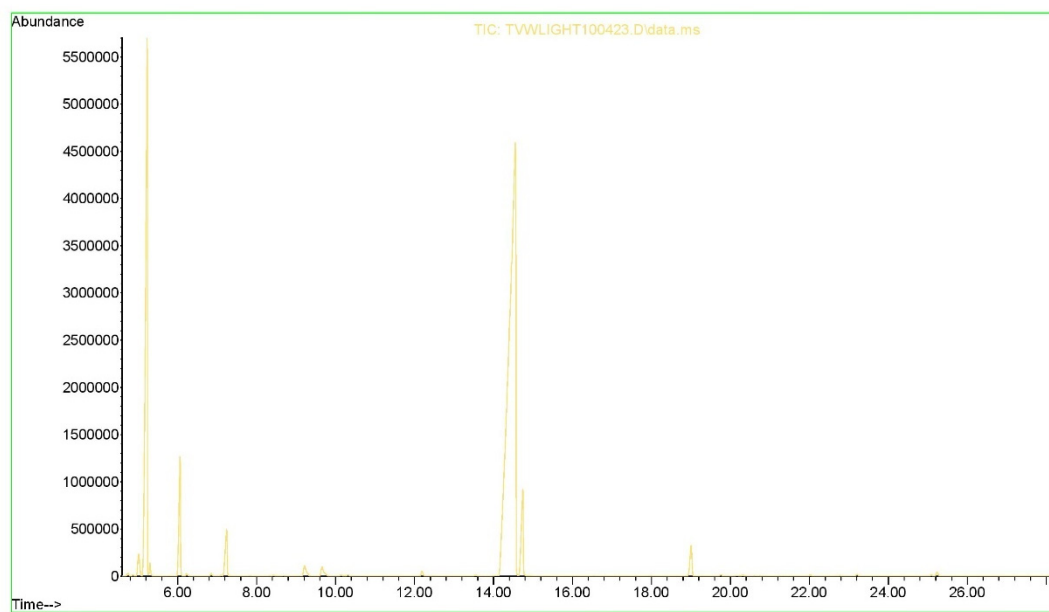


Figure 114 GC-MS chromatogram of *T. vulgaris* after 150 days of storage

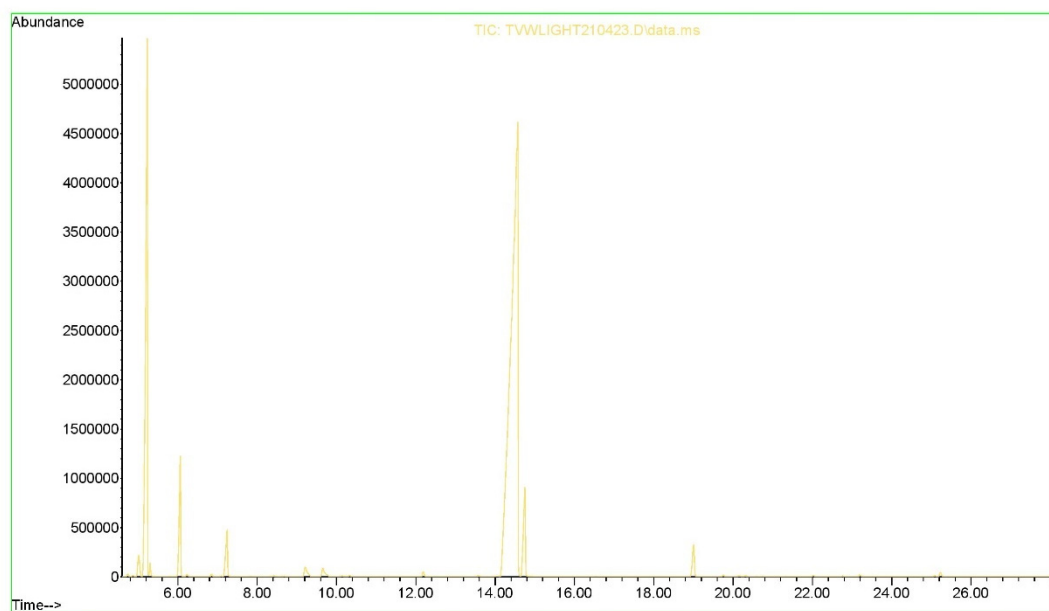


Figure 115 GC-MS chromatogram of *T. vulgaris* after 160 days of storage

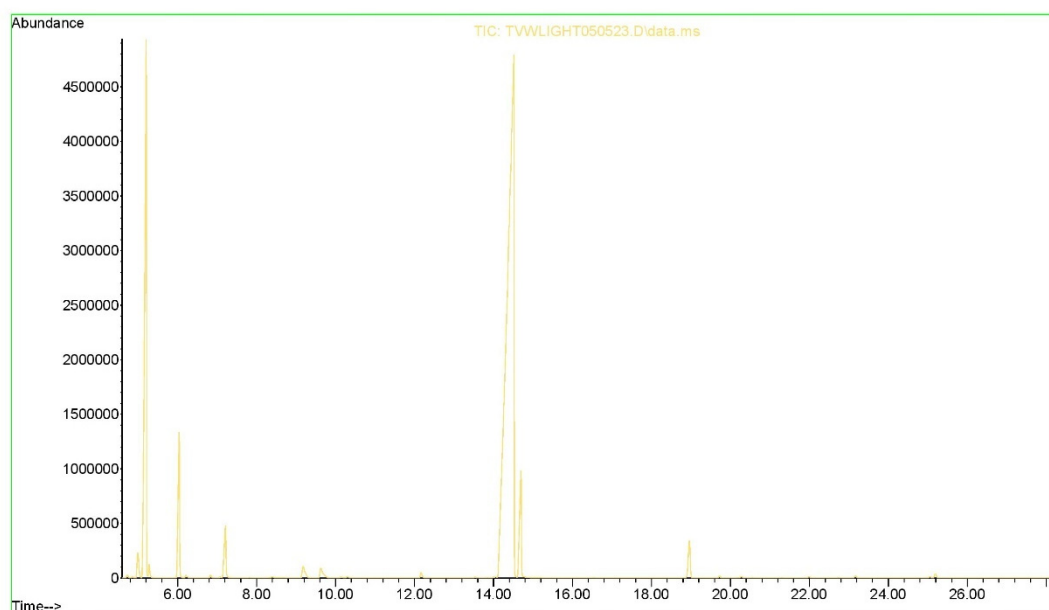


Figure 116 GC-MS chromatogram of *T. vulgaris* after 170 days of storage

#### 4.4. GC-MS chromatograms of the *T. vulgaris* essential oil during storage in sealed glass ampoules at 35 °C for 3 months

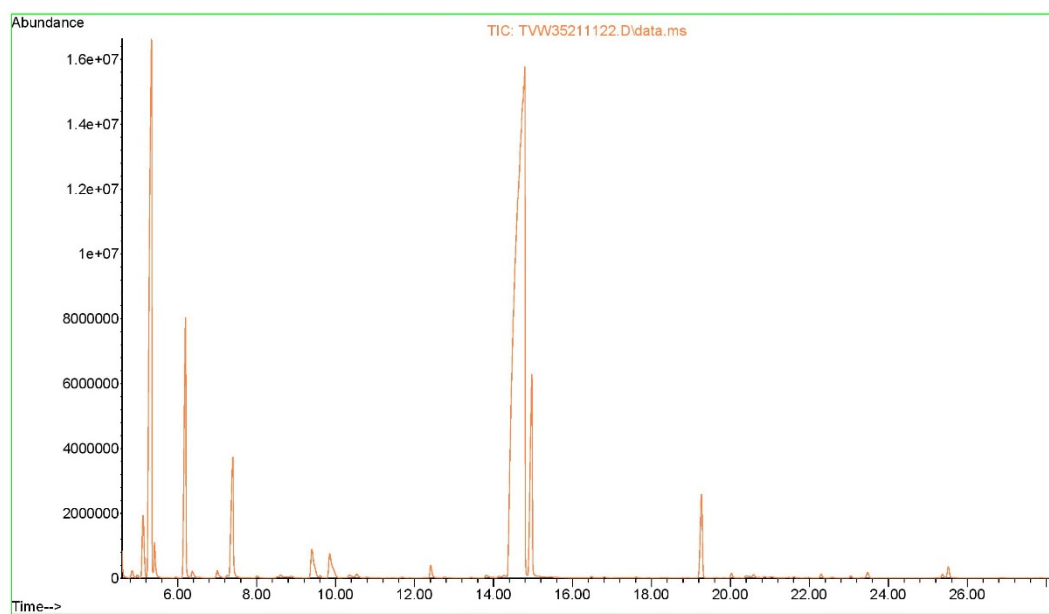


Figure 117 GC-MS chromatogram of *T. vulgaris* after 10 days of storage

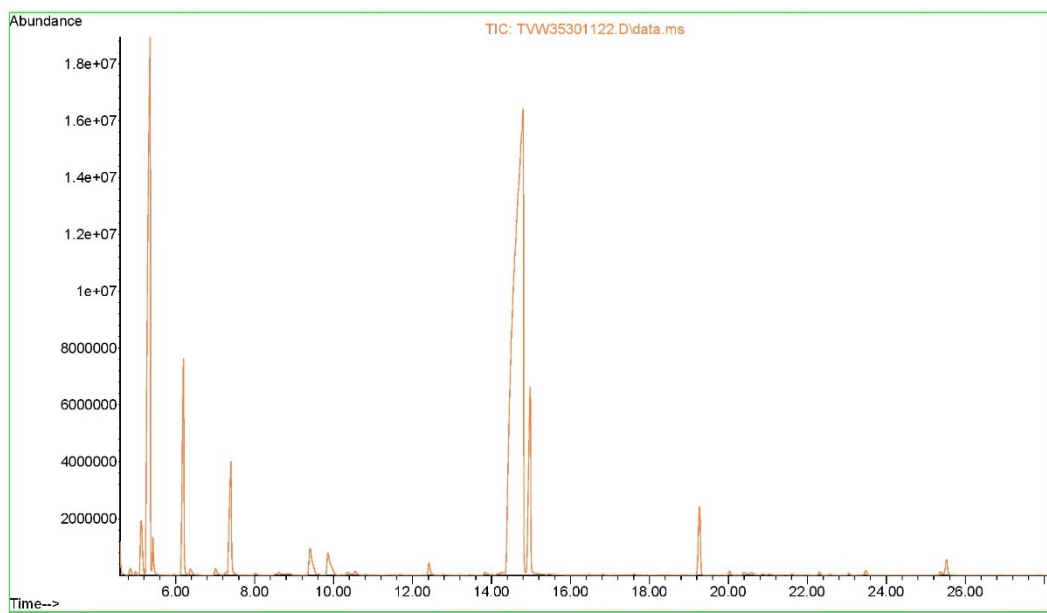


Figure 118 GC-MS chromatogram of *T. vulgaris* after 20 days of storage

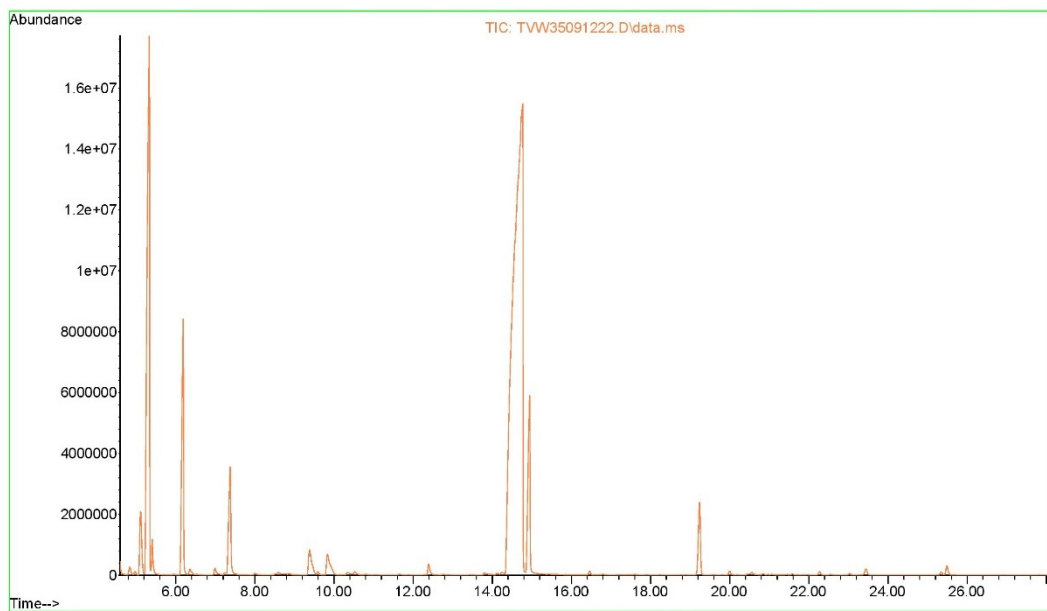


Figure 119 GC-MS chromatogram of *T. vulgaris* after 30 days of storage

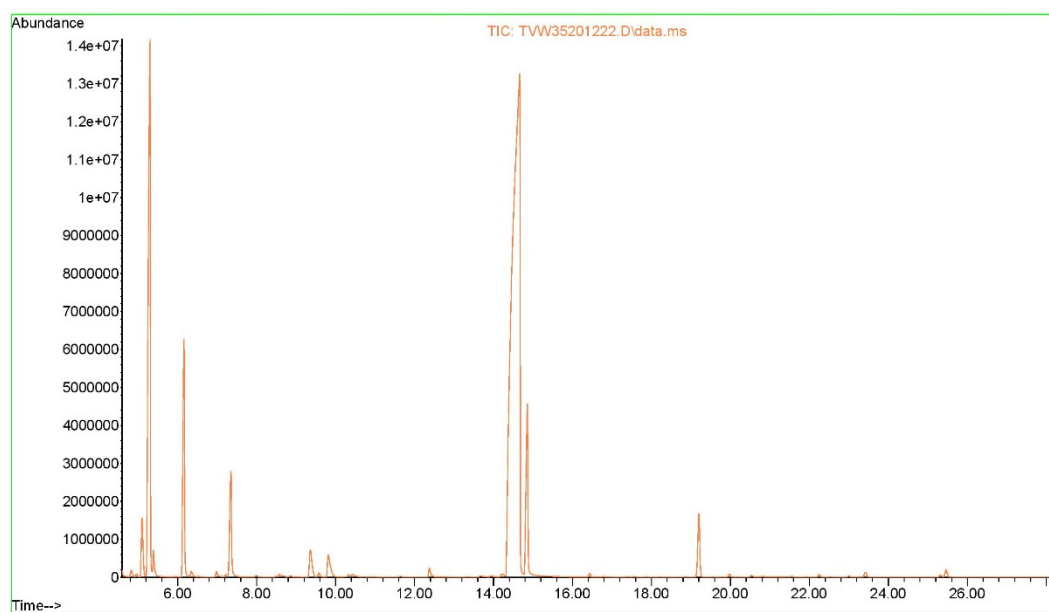


Figure 120 GC-MS chromatogram of *T. vulgaris* after 40 days of storage

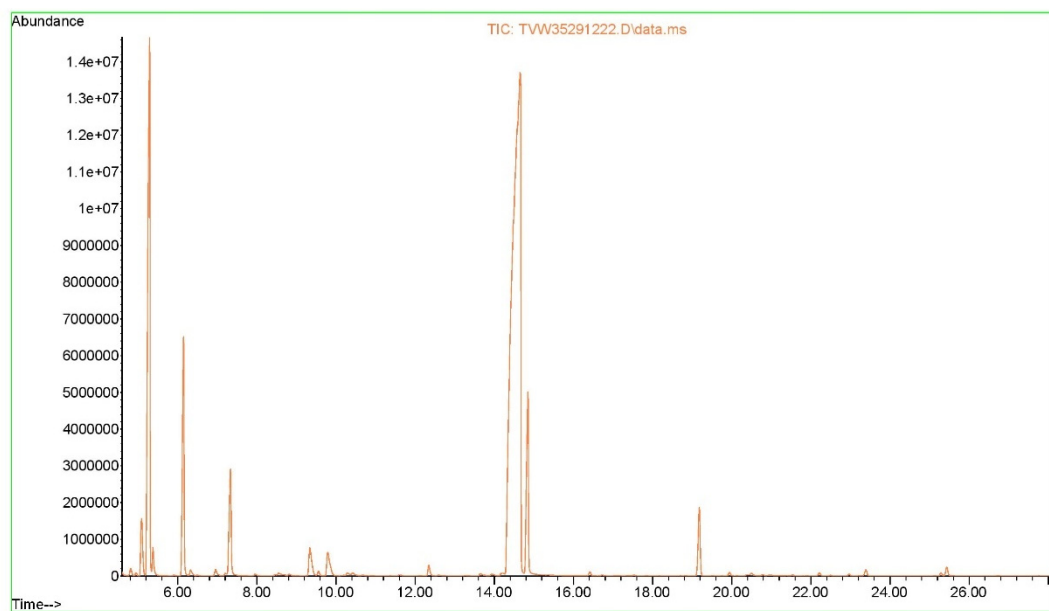


Figure 121 GC-MS chromatogram of *T. vulgaris* after 50 days of storage

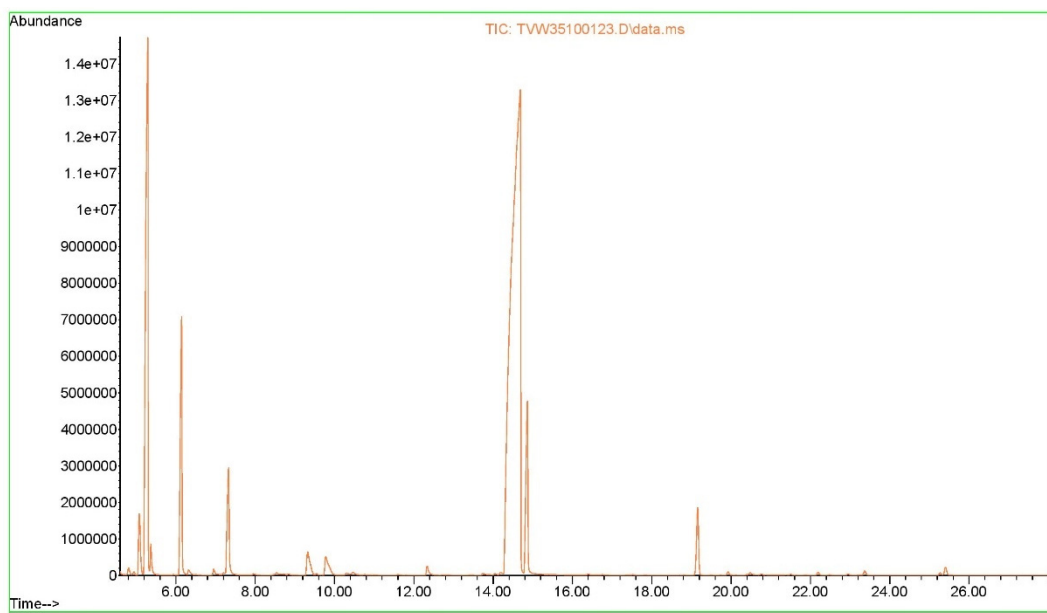


Figure 122 GC-MS chromatogram of *T. vulgaris* after 60 days of storage

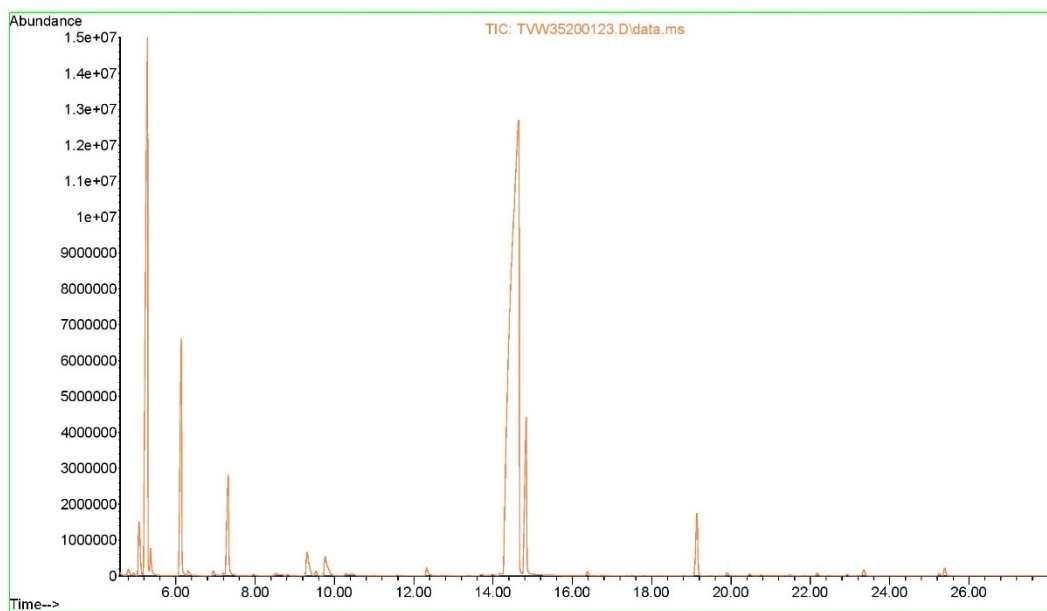


Figure 123 GC-MS chromatogram of *T. vulgaris* after 70 days of storage

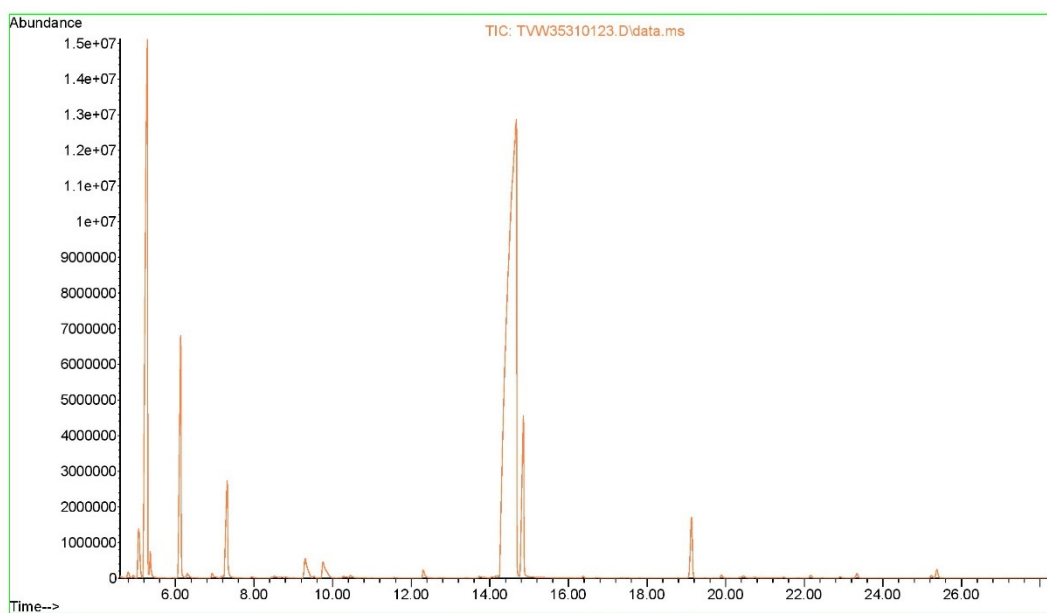


Figure 124 GC-MS chromatogram of *T. vulgaris* after 80 days of storage

#### 4.5. GC-MS chromatograms of the *T. vulgaris* essential oil during storage in sealed glass ampoules at 45 °C for 3 months

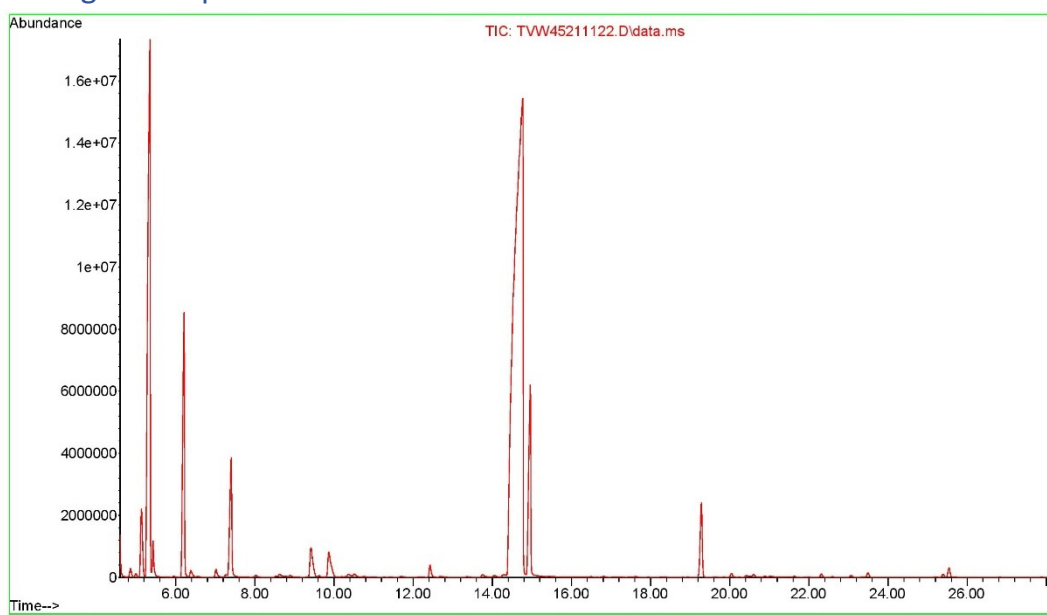


Figure 125 GC-MS chromatogram of *T. vulgaris* after 10 days of storage

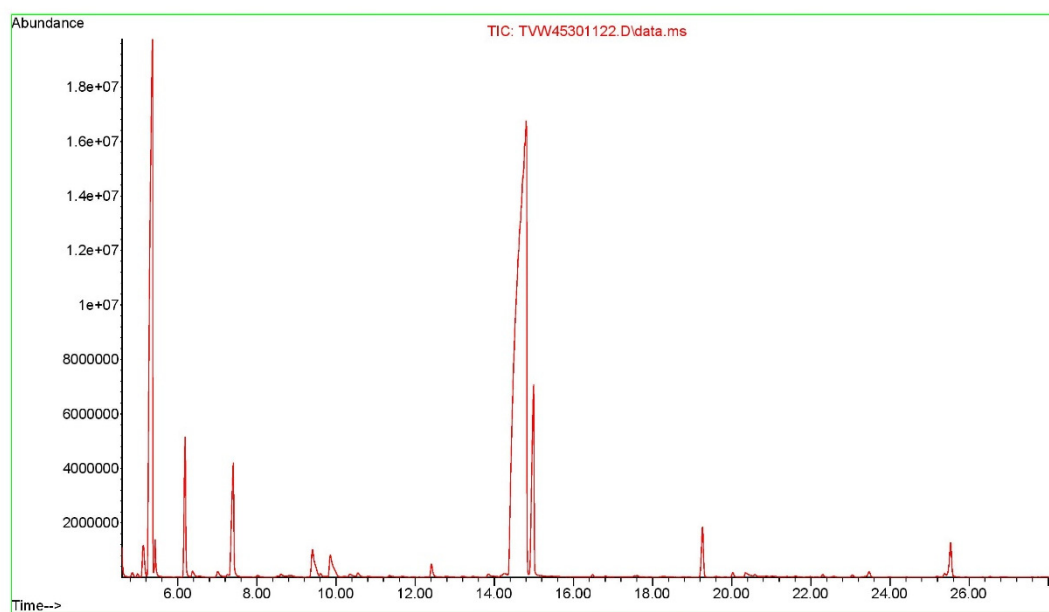


Figure 126 GC-MS chromatogram of *T. vulgaris* after 20 days of storage

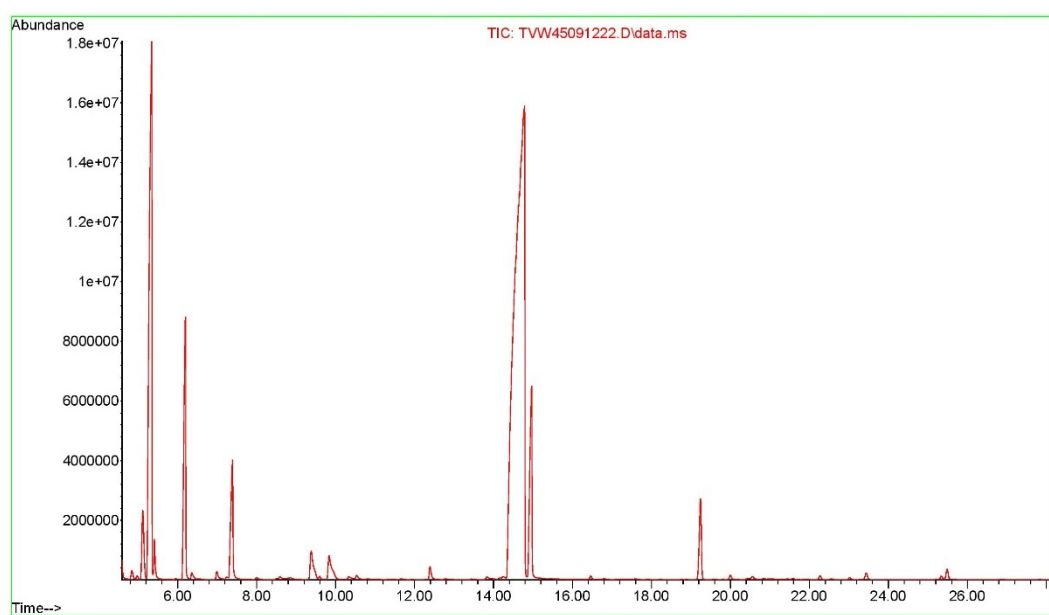


Figure 127 GC-MS chromatogram of *T. vulgaris* after 30 days of storage

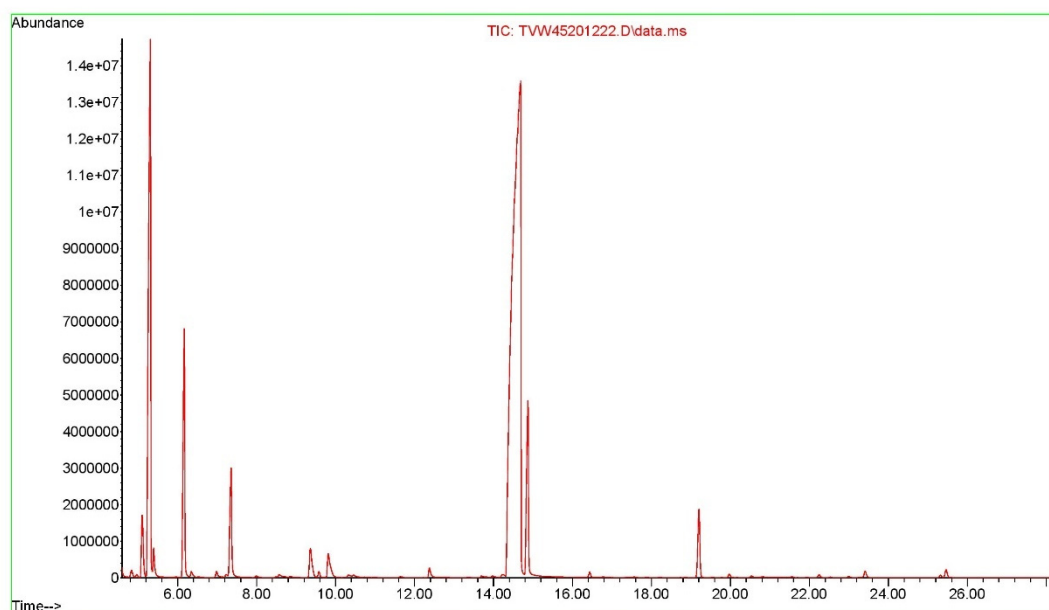


Figure 128 GC-MS chromatogram of *T. vulgaris* after 40 days of storage

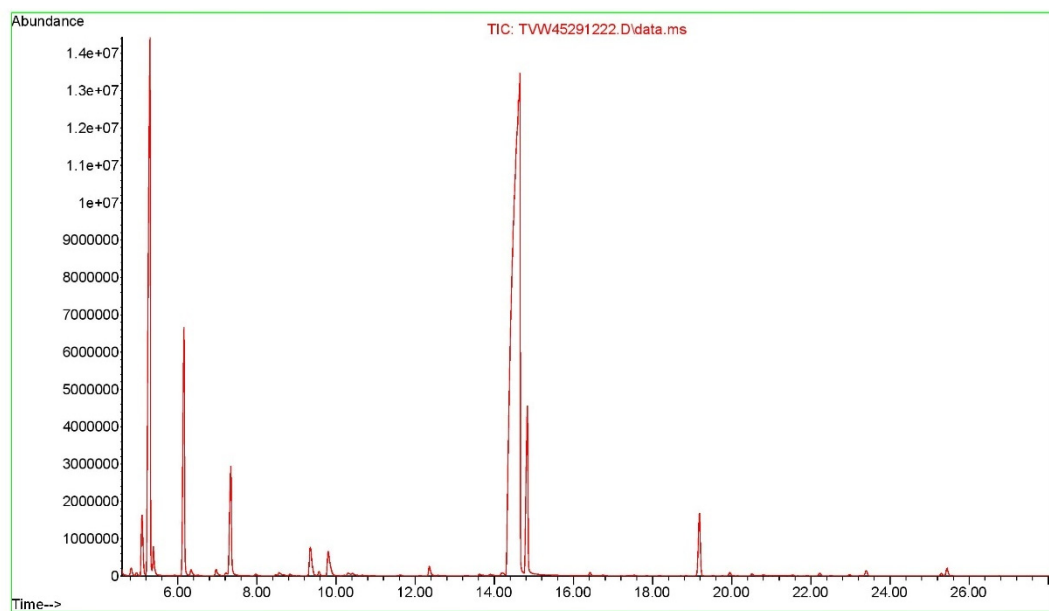


Figure 129 GC-MS chromatogram of *T. vulgaris* after 50 days of storage

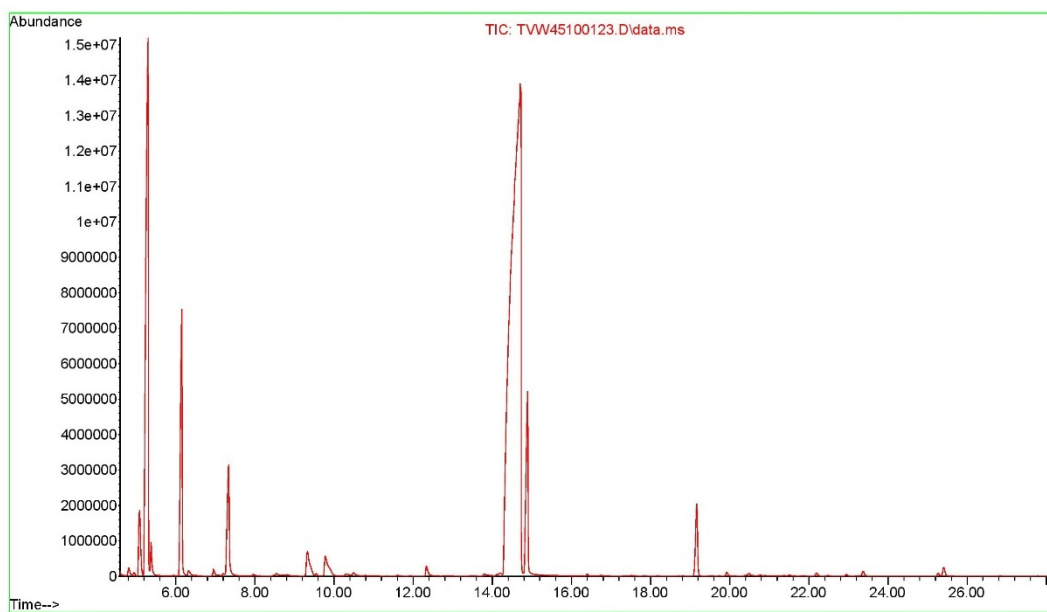


Figure 130 GC-MS chromatogram of *T. vulgaris* after 60 days of storage

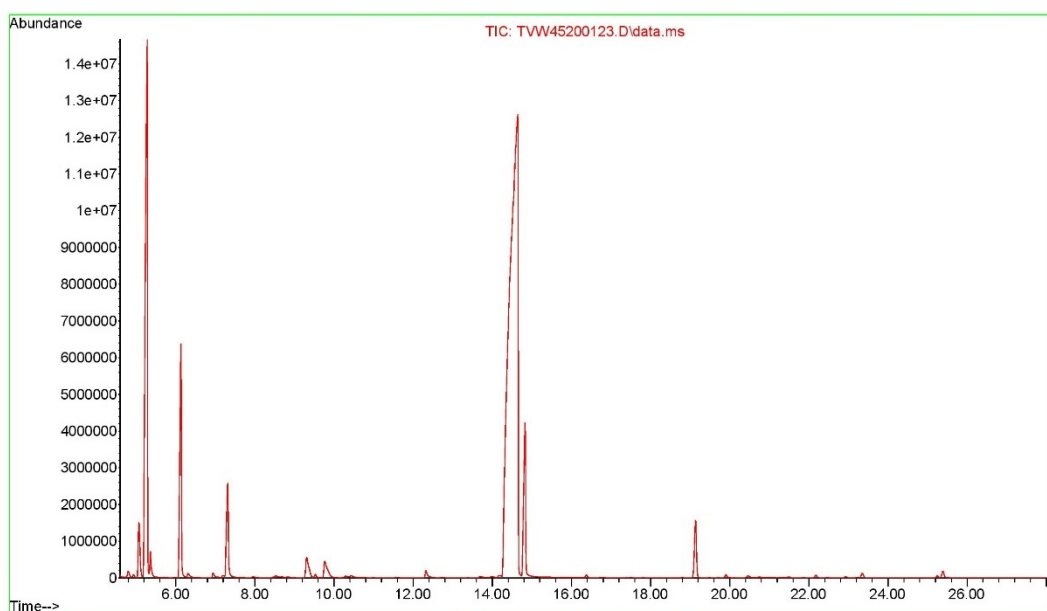


Figure 131 GC-MS chromatogram of *T. vulgaris* after 70 days of storage

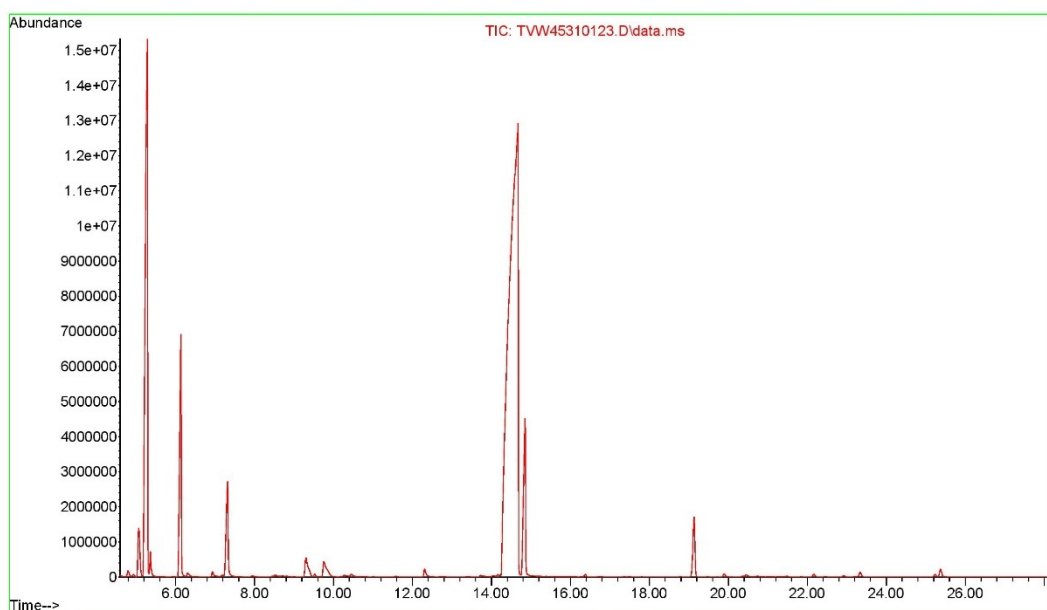


Figure 132 GC-MS chromatogram of *T. vulgaris* after 80 days of storage

#### 4.6. GC-MS chromatograms of the *T. vulgaris* essential oil during storage in glass tubes sealed with cap at 35 °C for 3 months

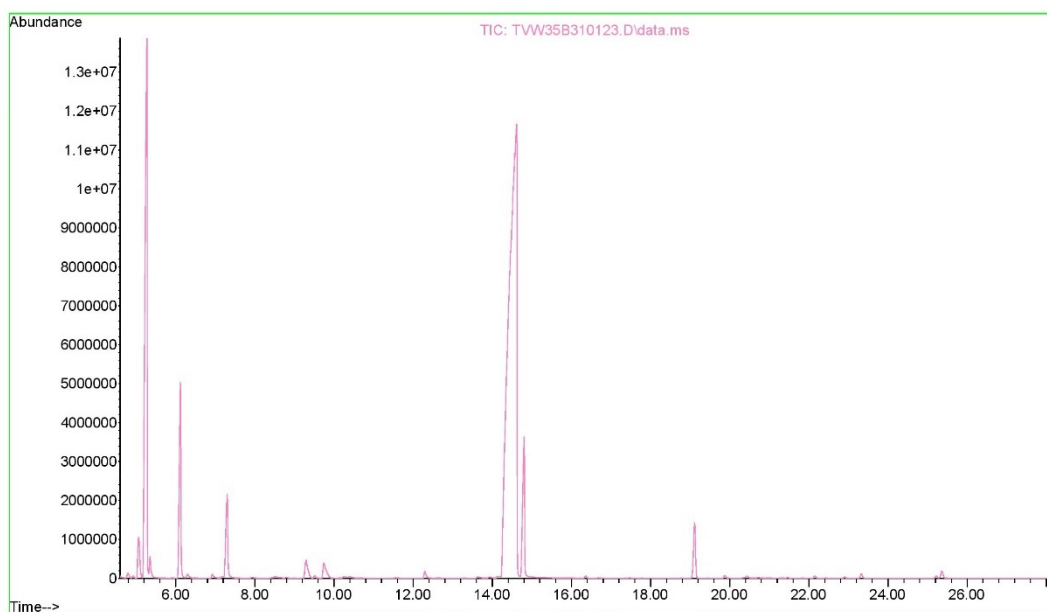


Figure 133 GC-MS chromatogram of *T. vulgaris* after 10 days of storage

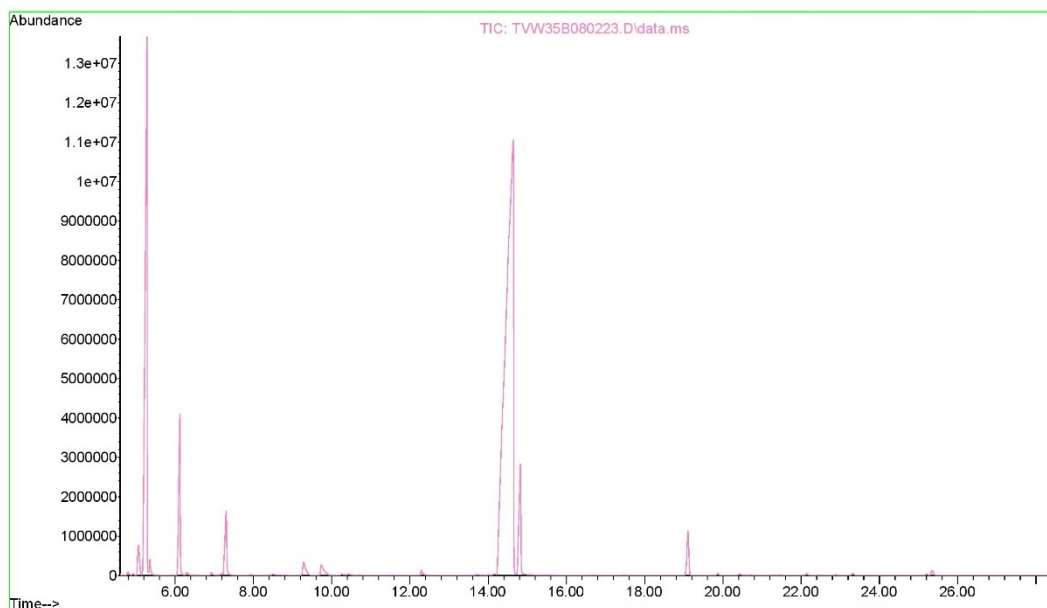


Figure 134 GC-MS chromatogram of *T. vulgaris* after 20 days of storage

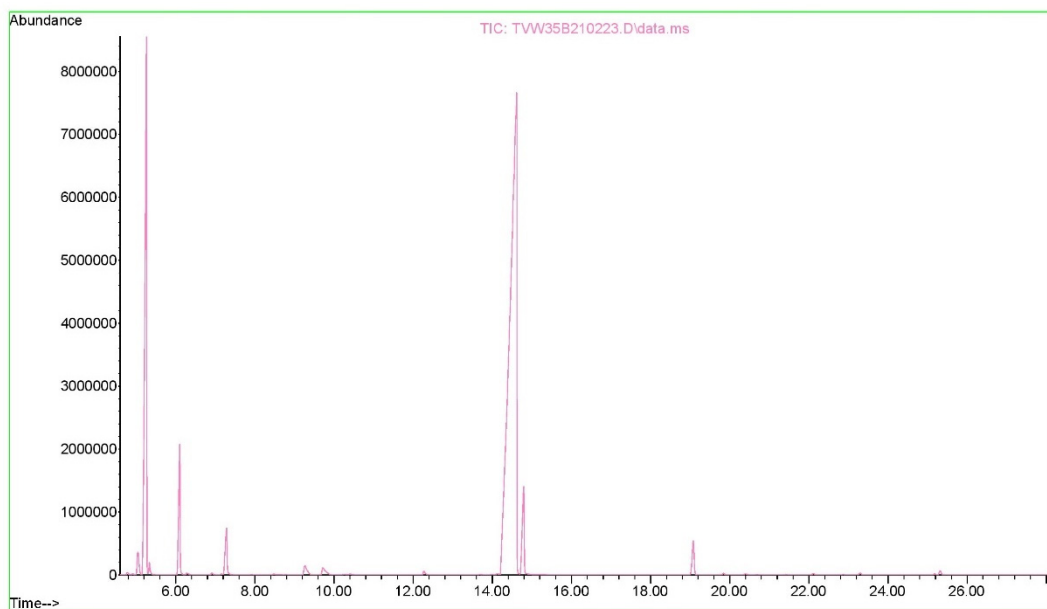


Figure 135 GC-MS chromatogram of *T. vulgaris* after 30 days of storage

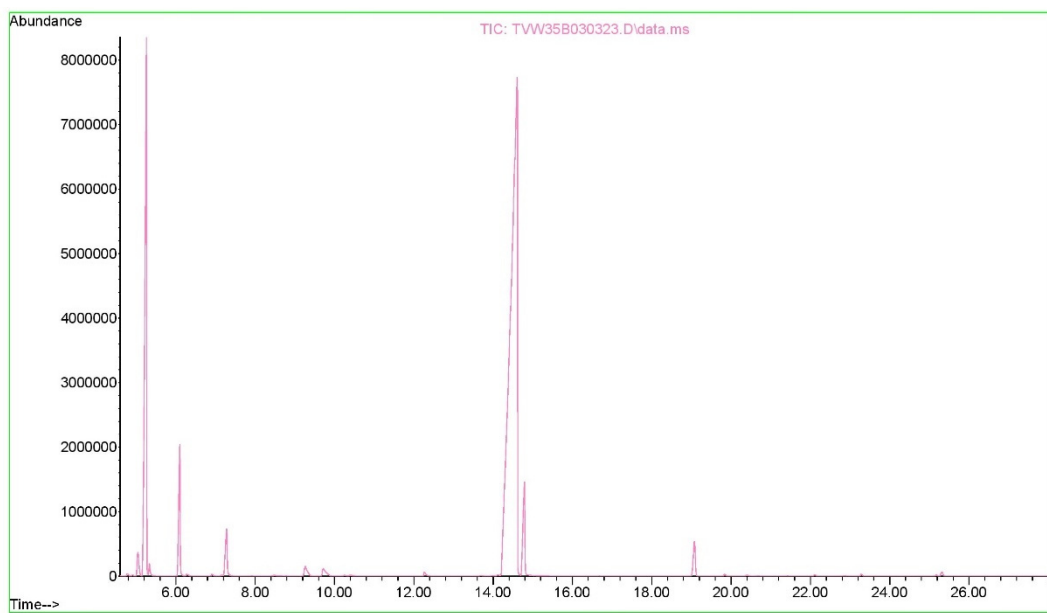


Figure 136 GC-MS chromatogram of *T. vulgaris* after 40 days of storage

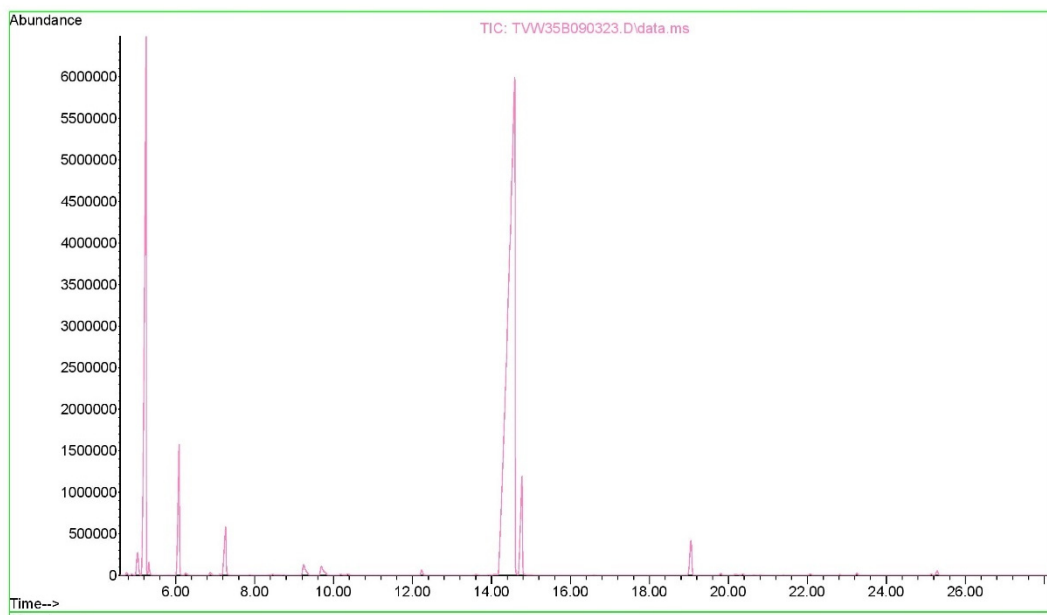


Figure 137 GC-MS chromatogram of *T. vulgaris* after 50 days of storage

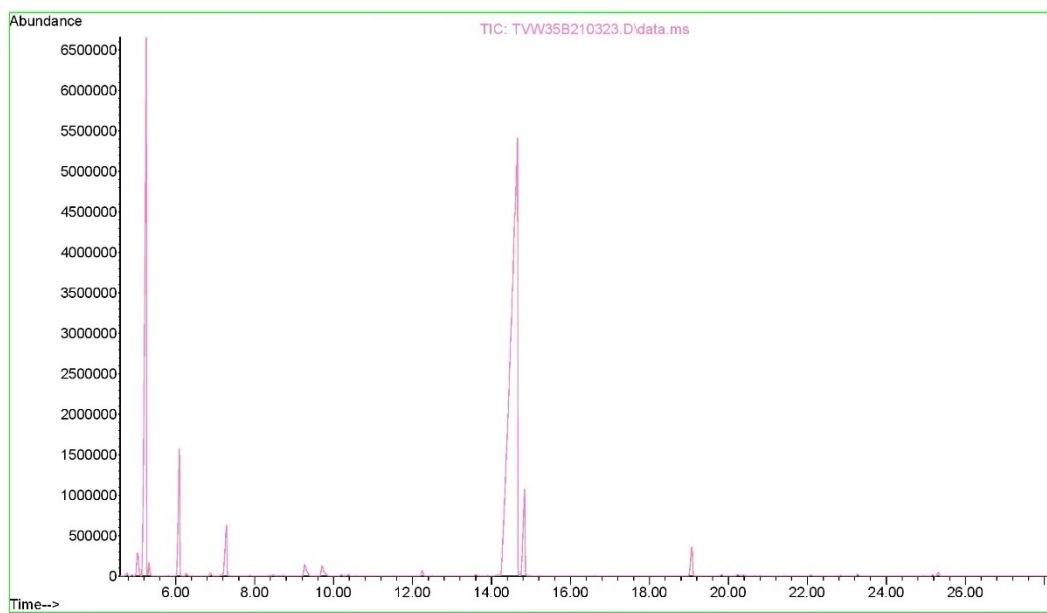


Figure 138 GC-MS chromatogram of *T. vulgaris* after 60 days of storage

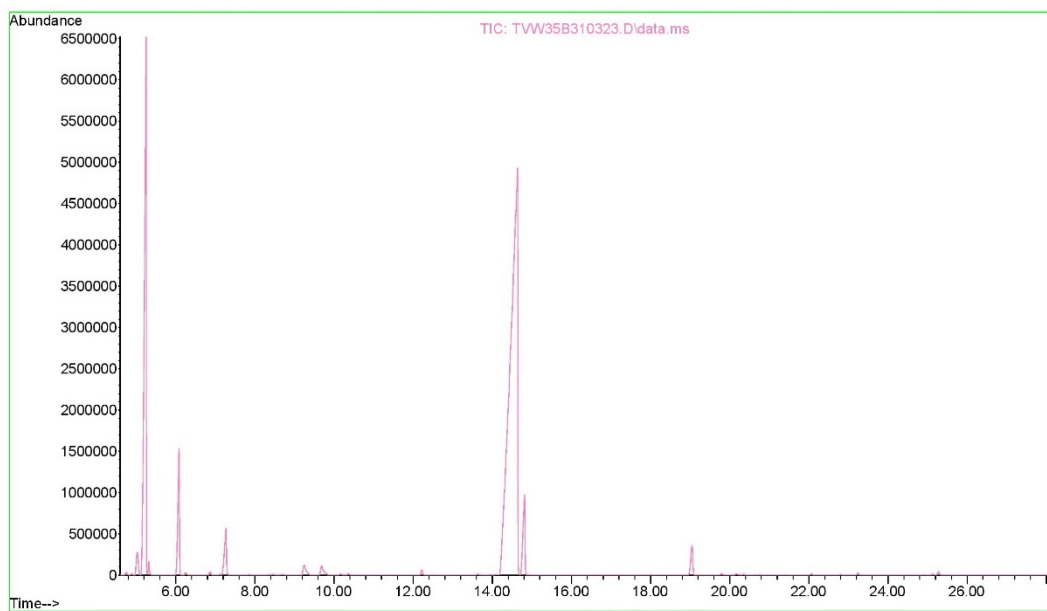


Figure 139 GC-MS chromatogram of *T. vulgaris* after 70 days of storage

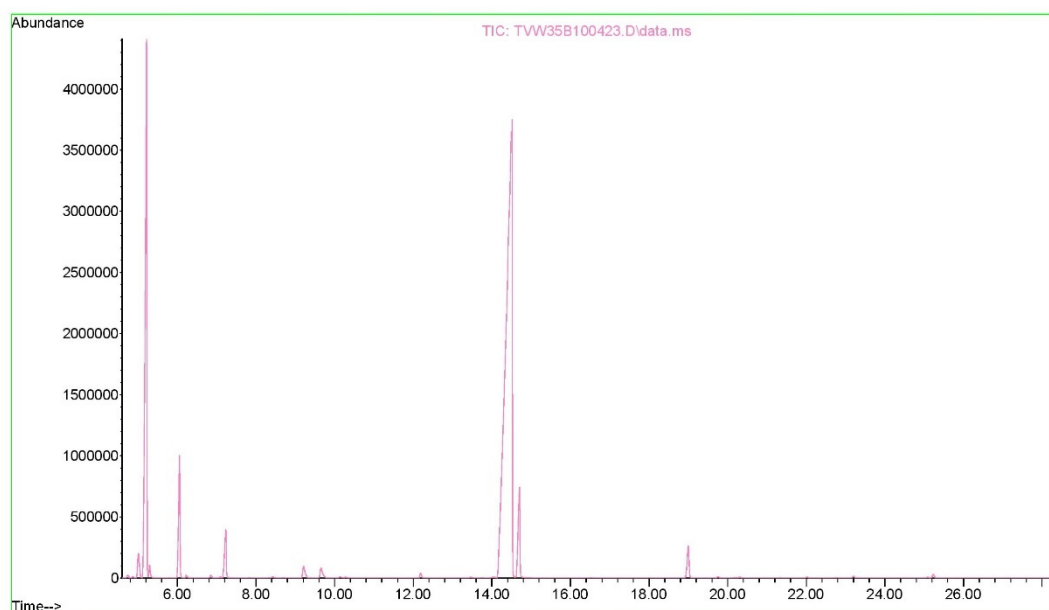


Figure 140 GC-MS chromatogram of *T. vulgaris* after 80 days of storage

#### 4.7. GC-MS chromatograms of the *T. vulgaris* essential oil during storage in glass tubes sealed with cap at 45 °C for 3 months

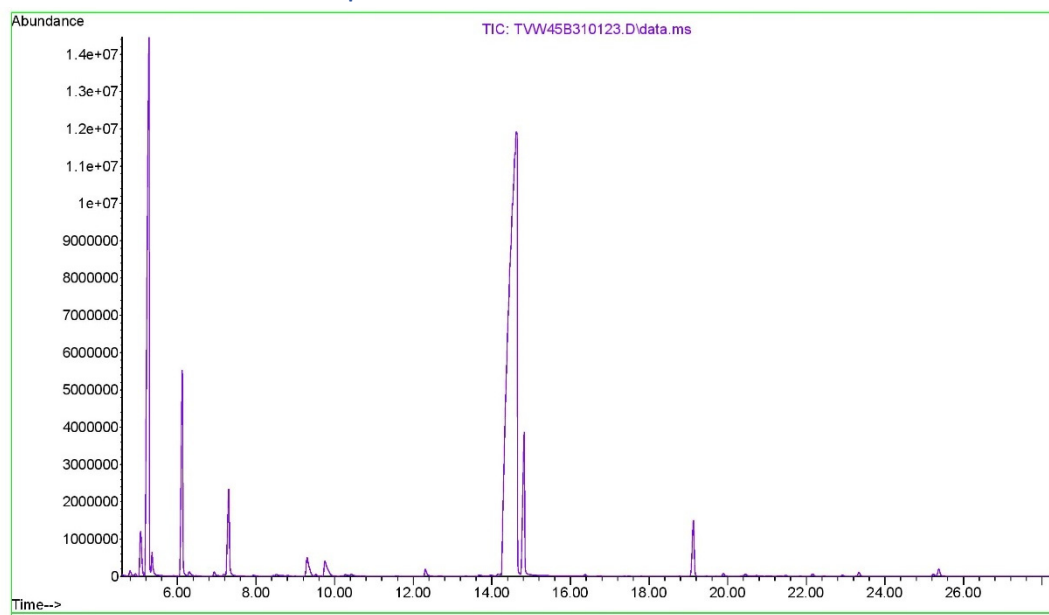


Figure 141 GC-MS chromatogram of *T. vulgaris* after 10 days of storage

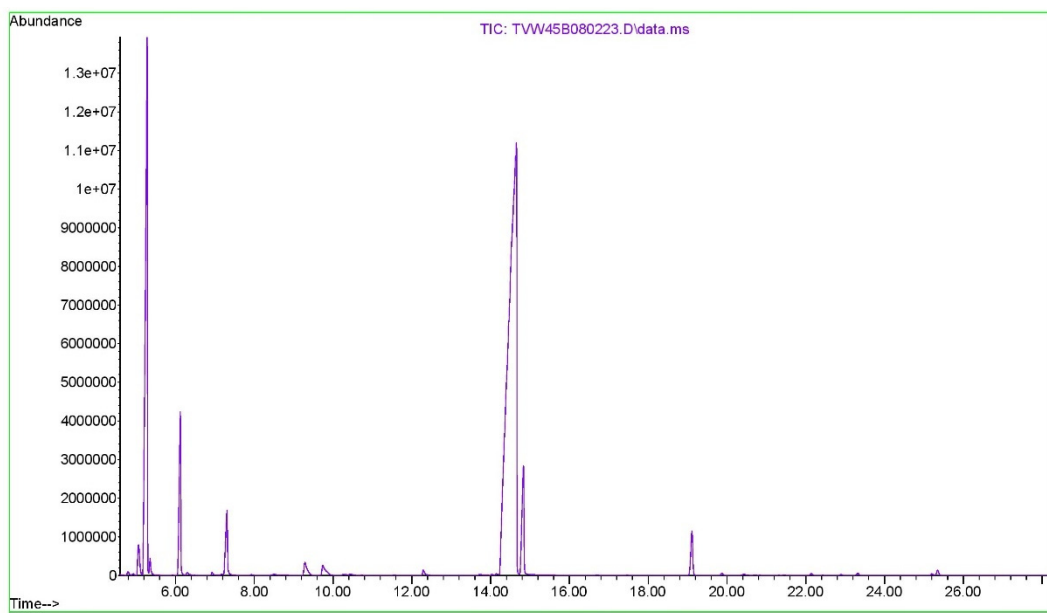


Figure 142 GC-MS chromatogram of *T. vulgaris* after 20 days of storage

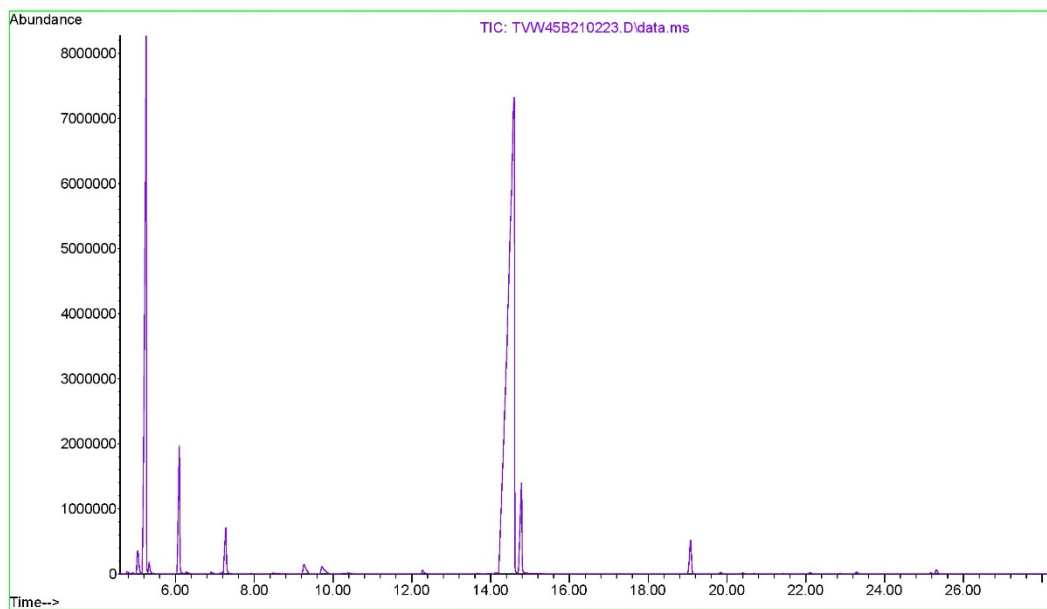


Figure 143 GC-MS chromatogram of *T. vulgaris* after 30 days of storage

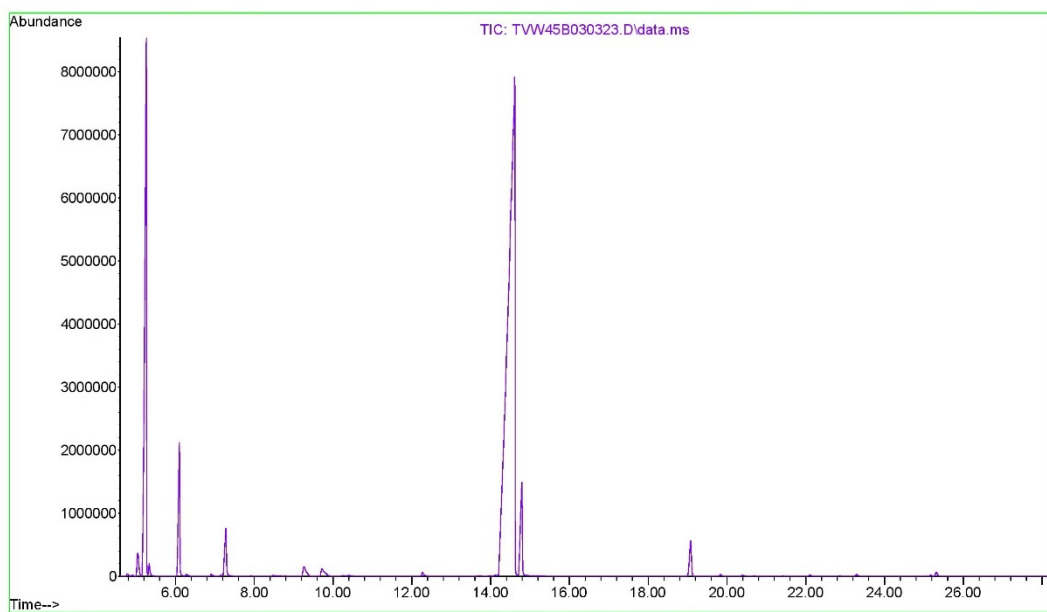


Figure 144 GC-MS chromatogram of *T. vulgaris* after 40 days of storage

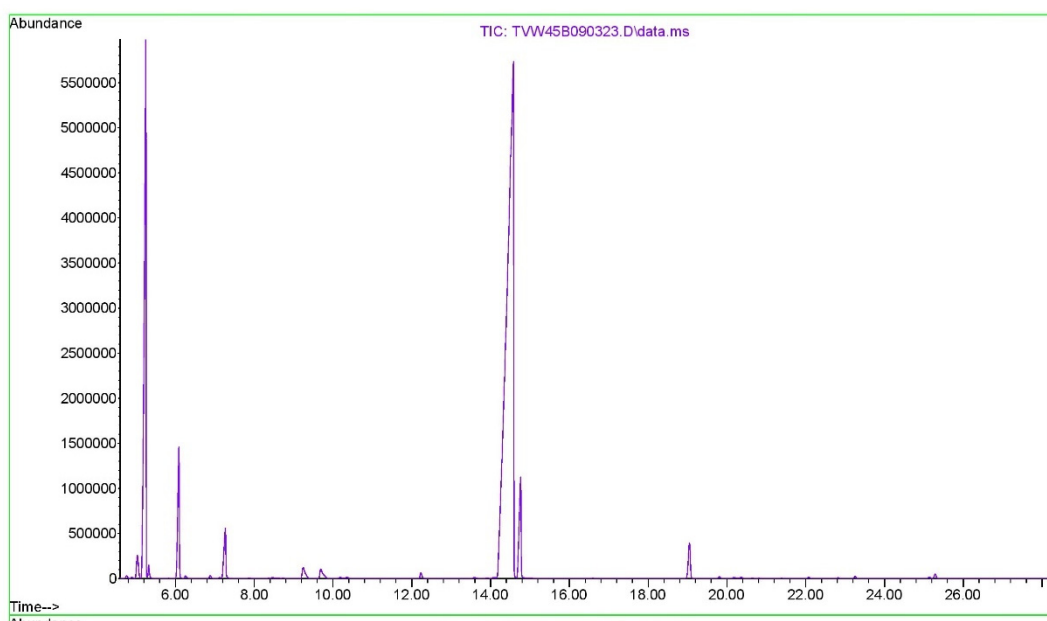


Figure 145 GC-MS chromatogram of *T. vulgaris* after 50 days of storage

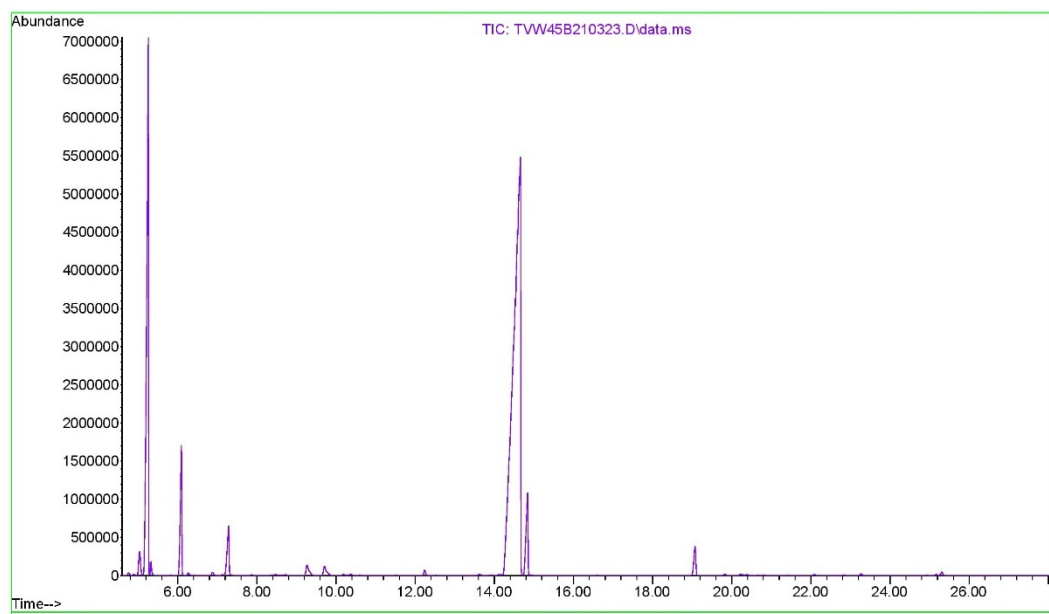


Figure 146 GC-MS chromatogram of *T. vulgaris* after 60 days of storage

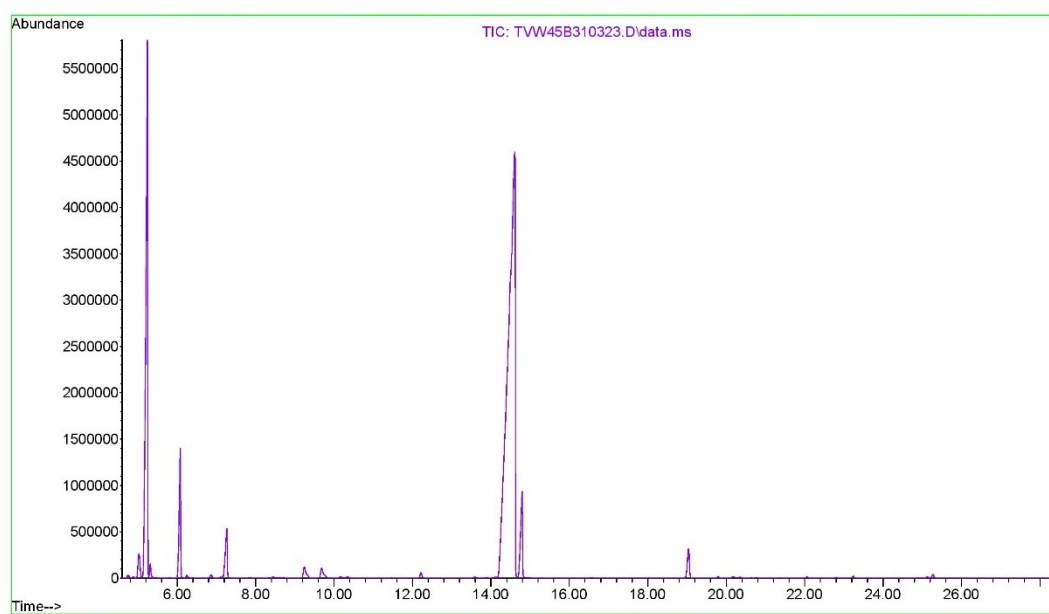


Figure 147 GC-MS chromatogram of *T. vulgaris* after 70 days of storage

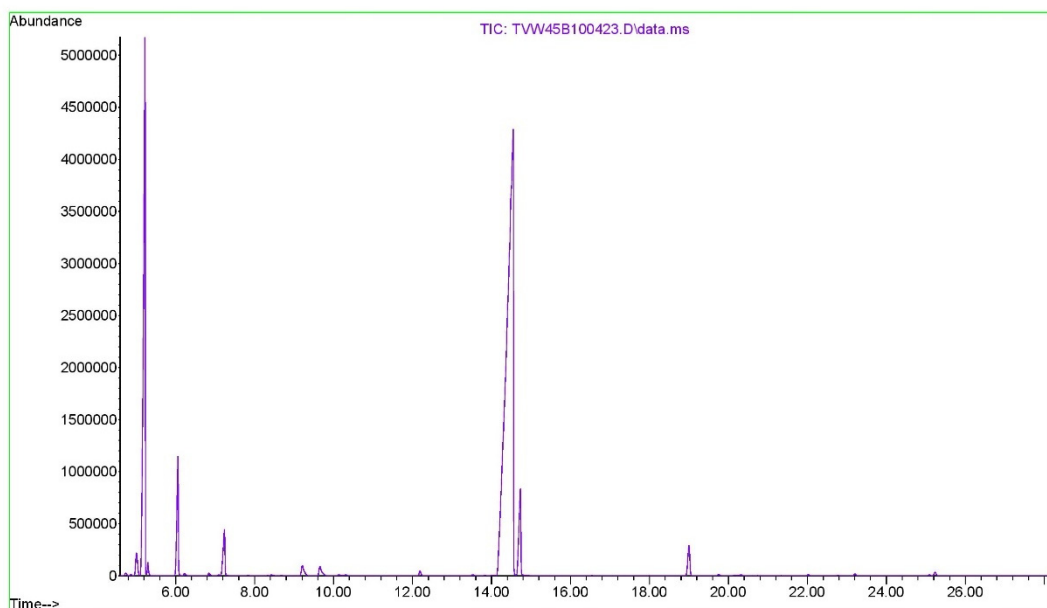


Figure 148 GC-MS chromatogram of *T. vulgaris* after 80 days of storage

#### 4.8. GC-MS chromatograms of the *T. vulgaris* essential oil during storage in glass tubes sealed with cap at 4 °C for 6 months

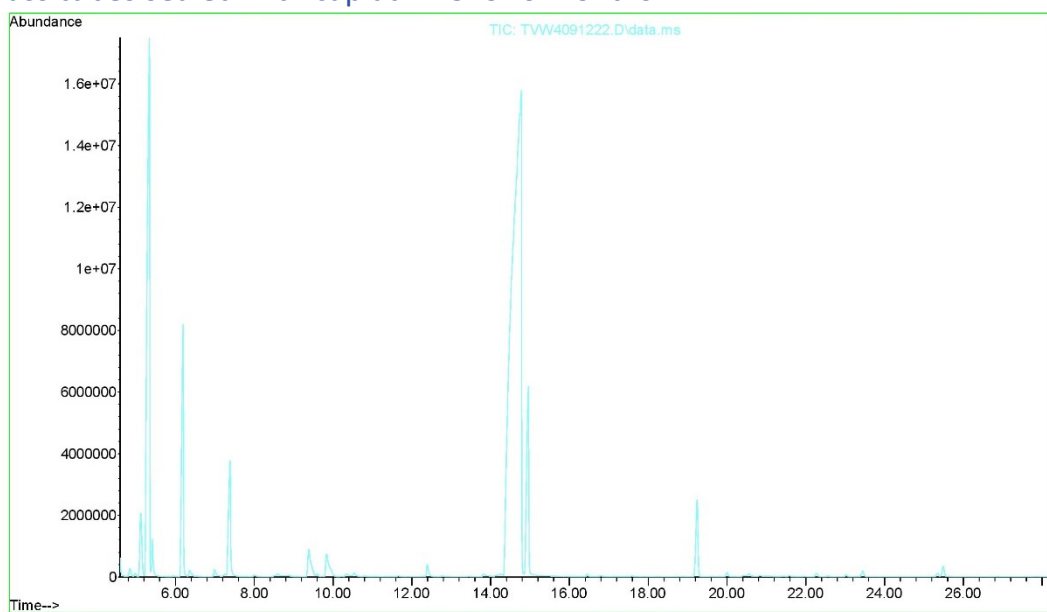


Figure 149 GC-MS chromatogram of *T. vulgaris* after 30 days of storage

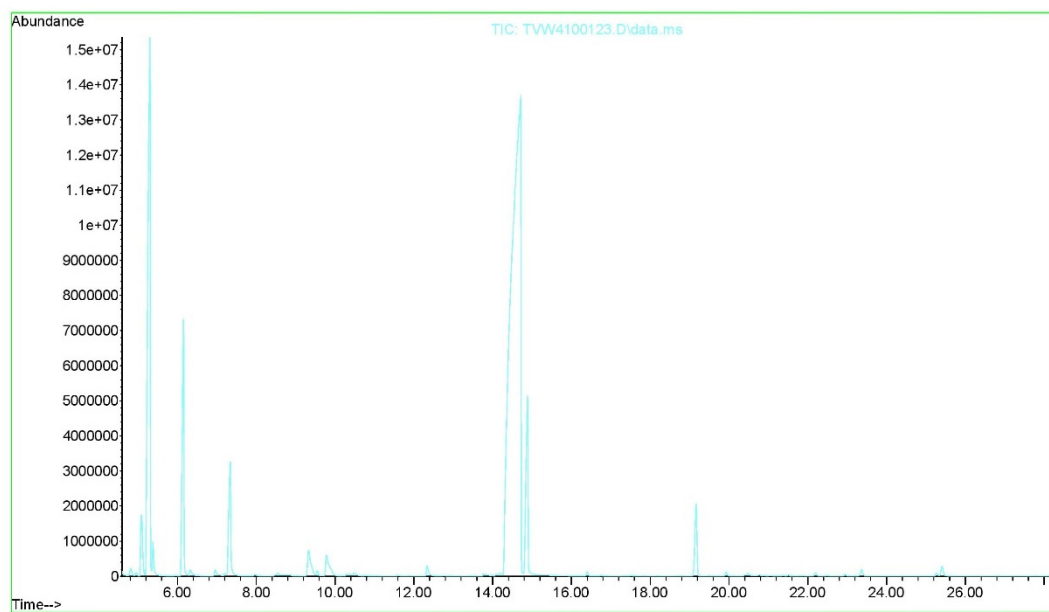


Figure 150 GC-MS chromatogram of *T. vulgaris* after 60 days of storage

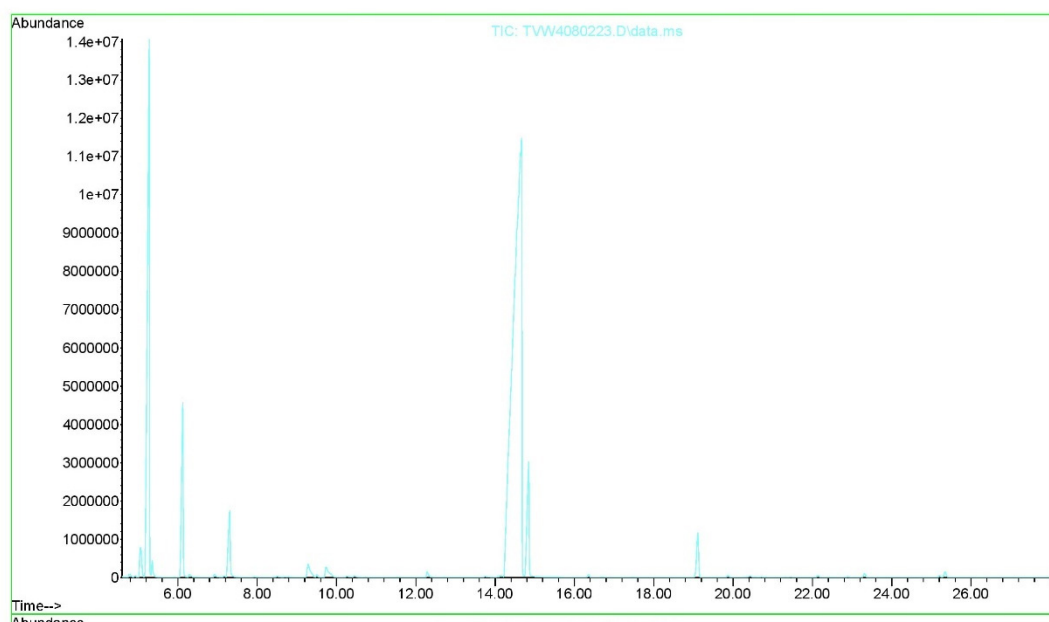


Figure 151 GC-MS chromatogram of *T. vulgaris* after 90 days of storage

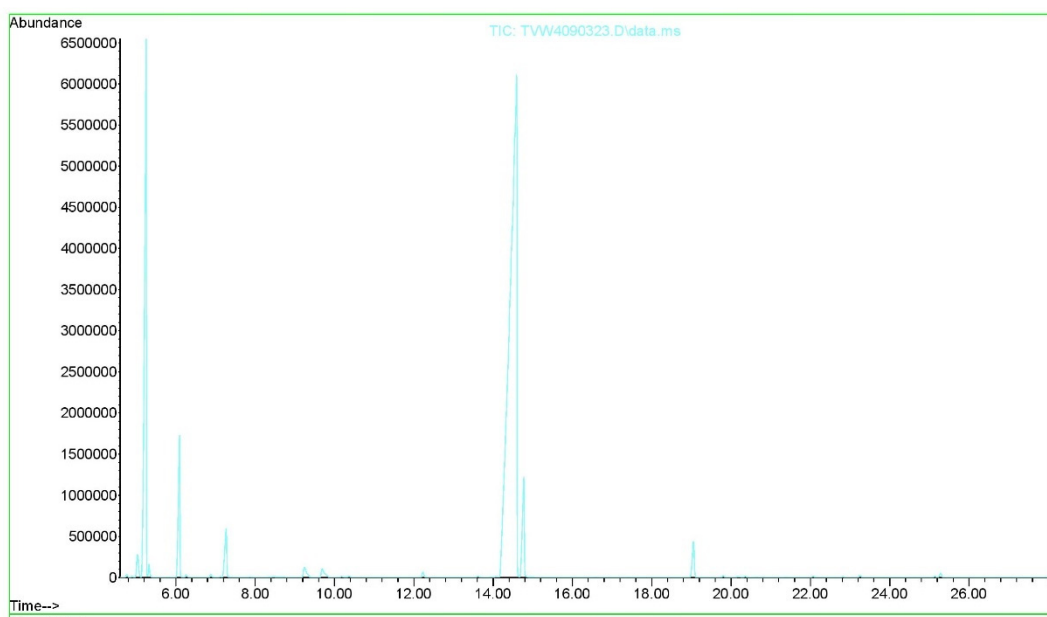


Figure 152 GC-MS chromatogram of *T. vulgaris* after 120 days of storage

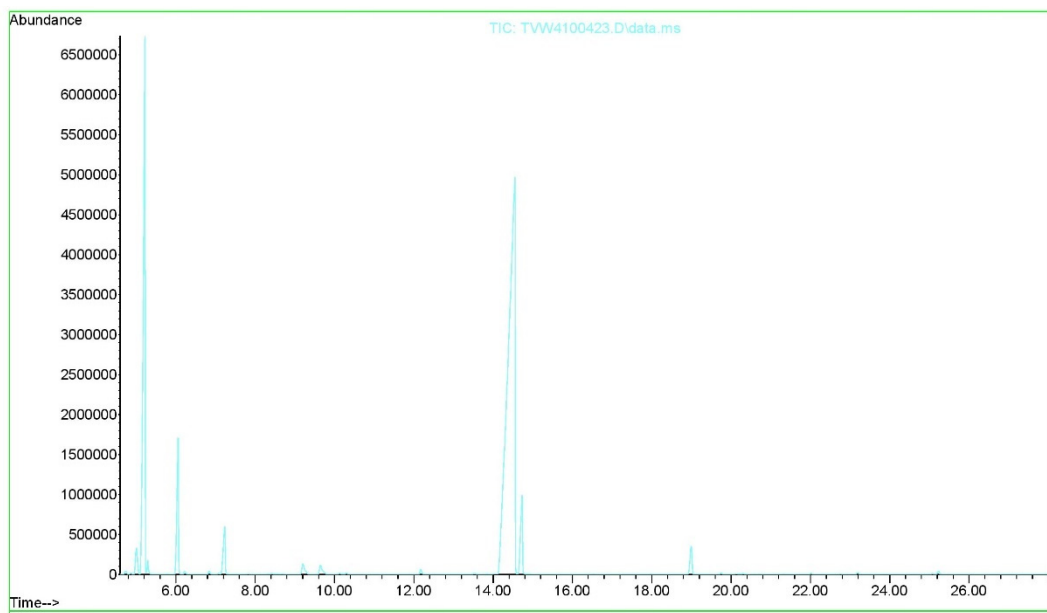


Figure 153 GC-MS chromatogram of *T. vulgaris* after 150 days of storage

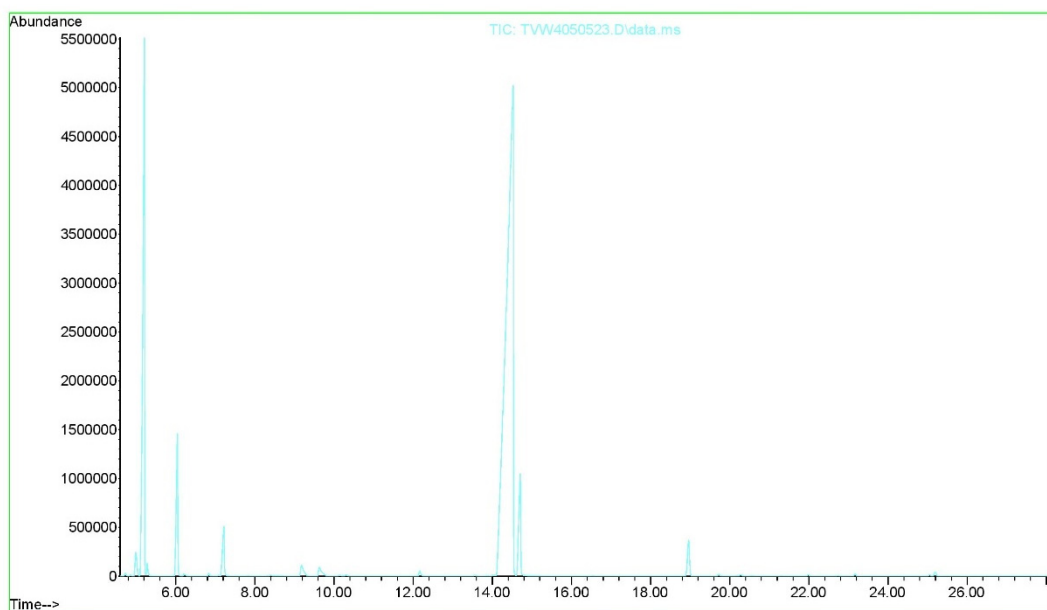


Figure 154 GC-MS chromatogram of *T. vulgaris* after 180 days of storage

#### 4.9. GC-MS chromatogram of the *T. vulgaris* essential oil during storage in metal container at 4 °C for 6 months

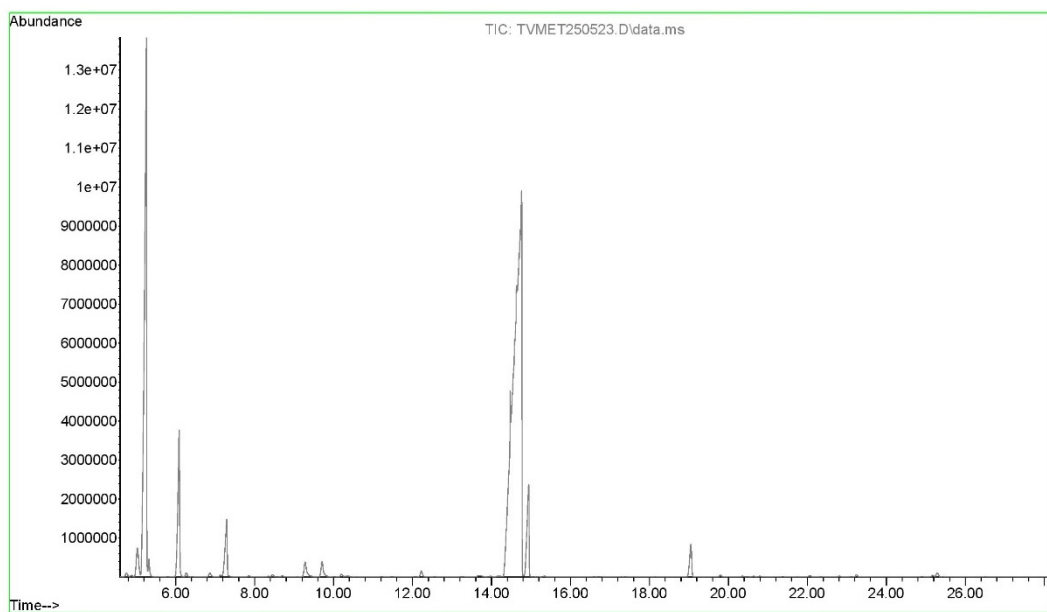


Figure 155 GC-MS chromatogram of *T. vulgaris* after 180 days of storage

4.10. GC-MS chromatogram of the *T. vulgaris* essential oil during storage in sealed glass ampoules at 4 °C for 6 months

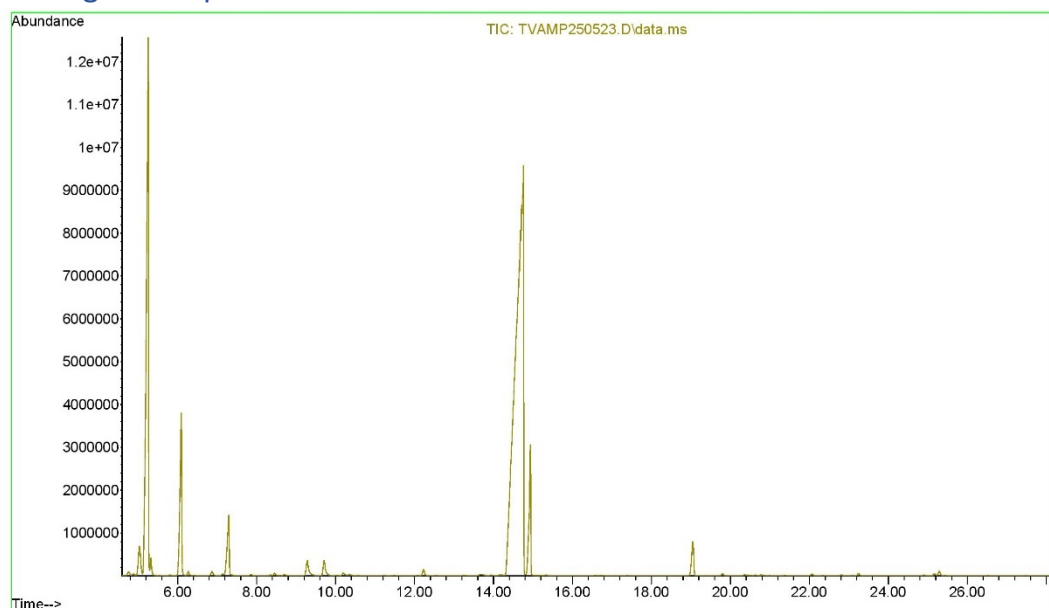


Figure 156 GC-MS chromatogram of *T. vulgaris* after 180 days of storage

4.11. GC-MS chromatogram of the *T. vulgaris* essential oil during storage in glass tubes sealed with cap at -20 °C for 6 months

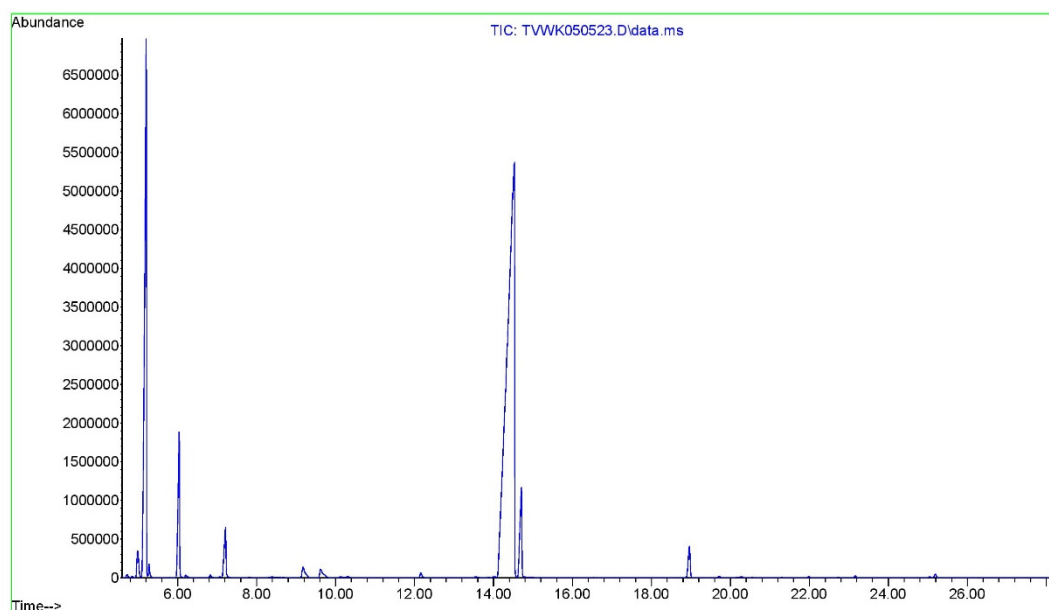


Figure 157 GC-MS chromatogram of *T. vulgaris* after 180 days of storage

## 5. GC-MS chromatograms of the *Mentha spicata* L. essential oil

### 5.1. GC-MS chromatogram of the initial *M. spicata* essential oil

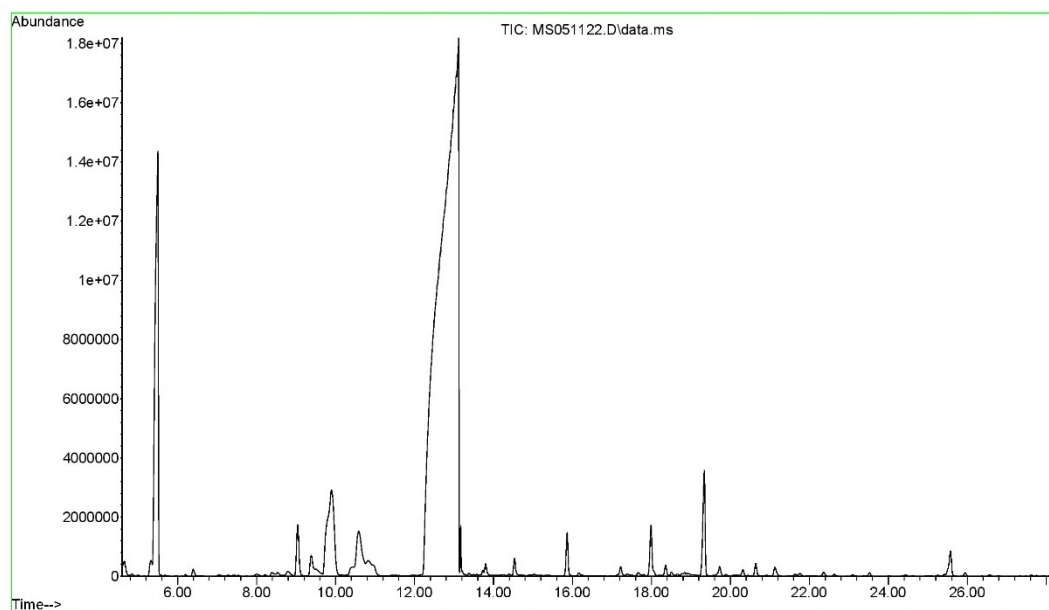


Figure 158 GC-MS chromatogram of *M. spicata* before storage

### 5.2. GC-MS chromatograms of the *M. spicata* essential oil during storage in glass tubes sealed with cap at room temperature (23 °C) under darkness for 6 months

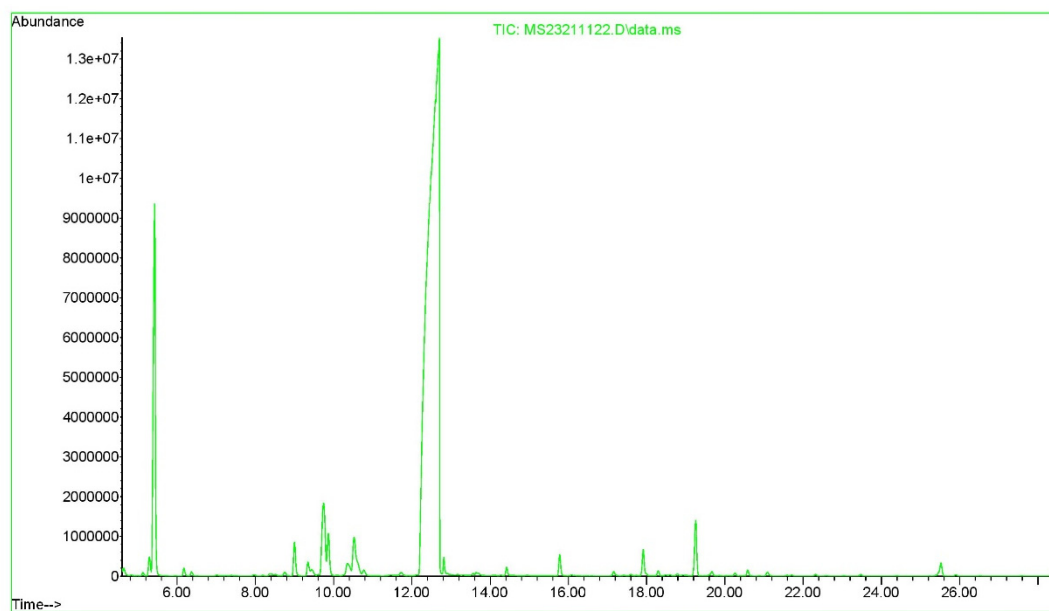


Figure 159 GC-MS chromatogram of *M. spicata* after 10 days of storage

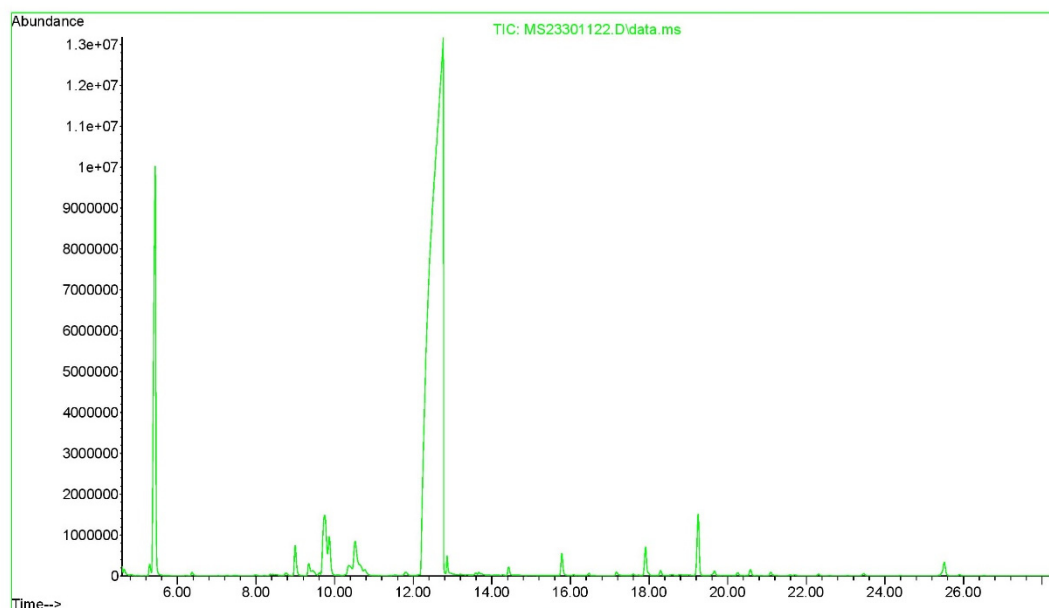


Figure 160 GC-MS chromatogram of *M. spicata* after 20 days of storage

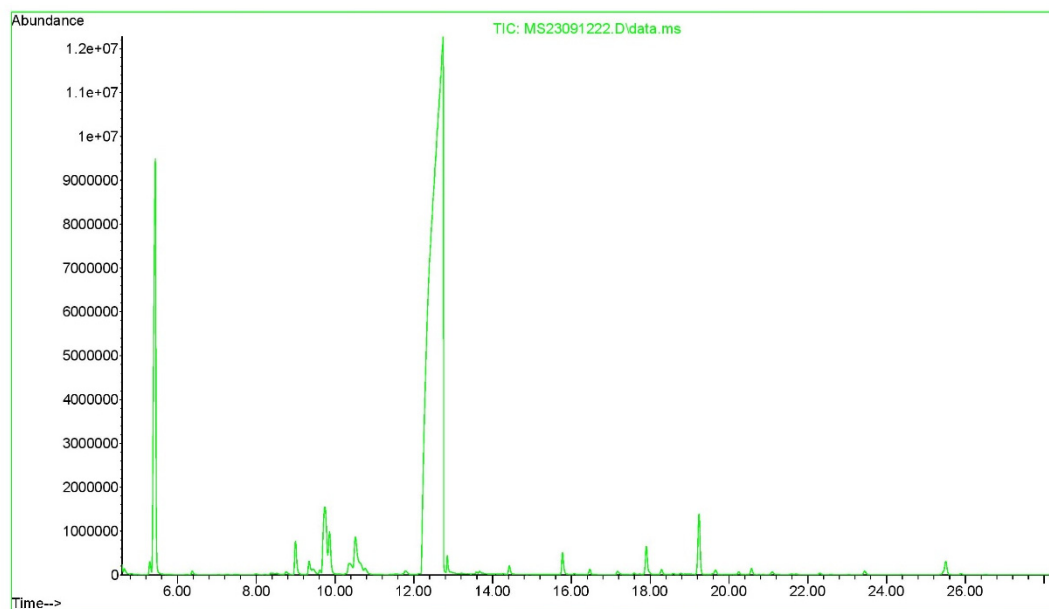


Figure 161 GC-MS chromatogram of *M. spicata* after 30 days of storage

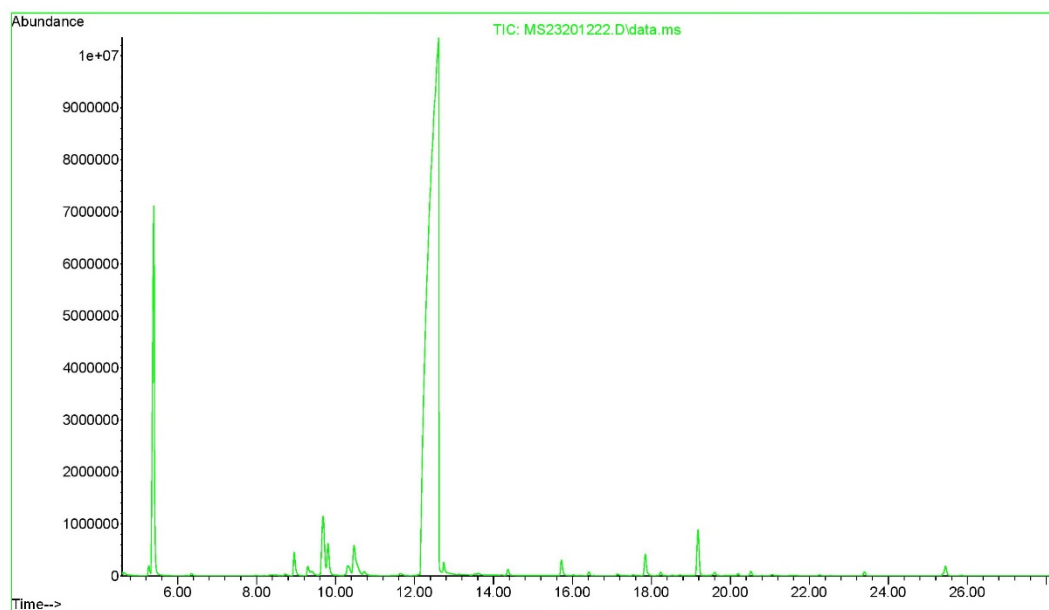


Figure 162 GC-MS chromatogram of *M. spicata* after 40 days of storage

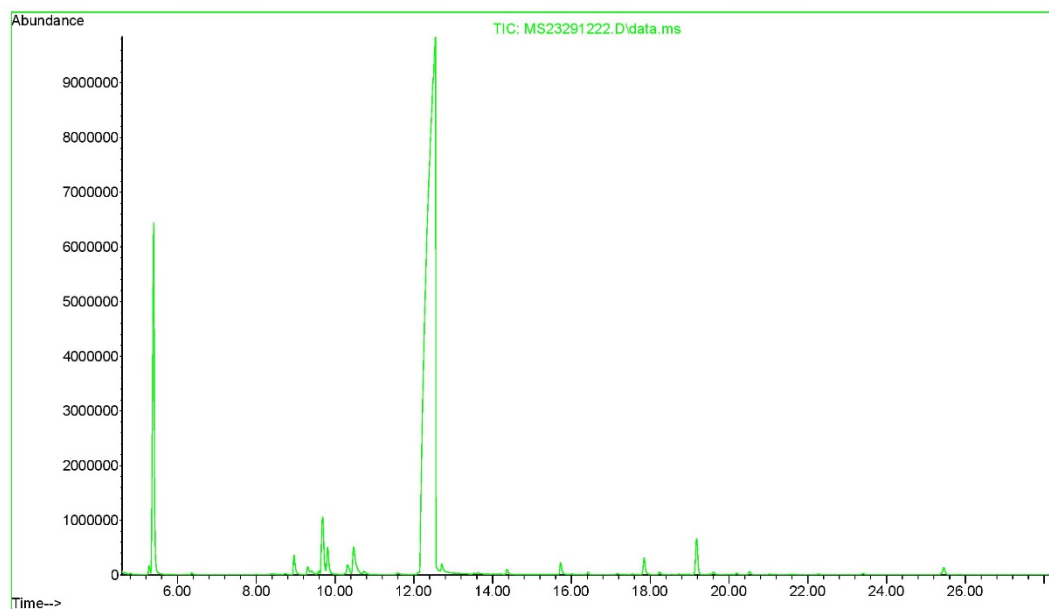


Figure 163 GC-MS chromatogram of *M. spicata* after 50 days of storage

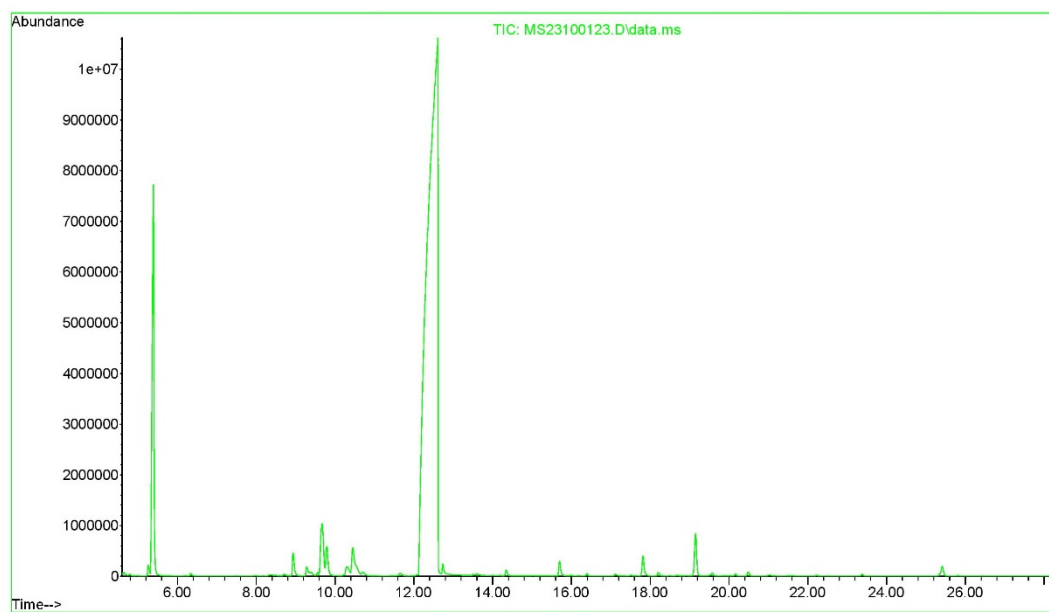


Figure 164 GC-MS chromatogram of *M. spicata* after 60 days of storage

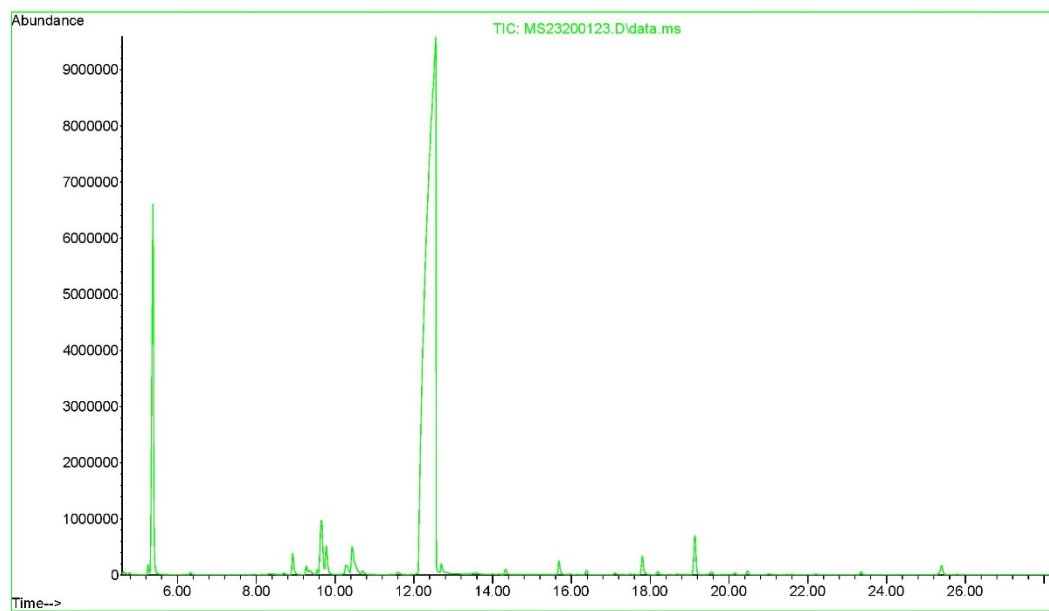


Figure 165 GC-MS chromatogram of *M. spicata* after 70 days of storage

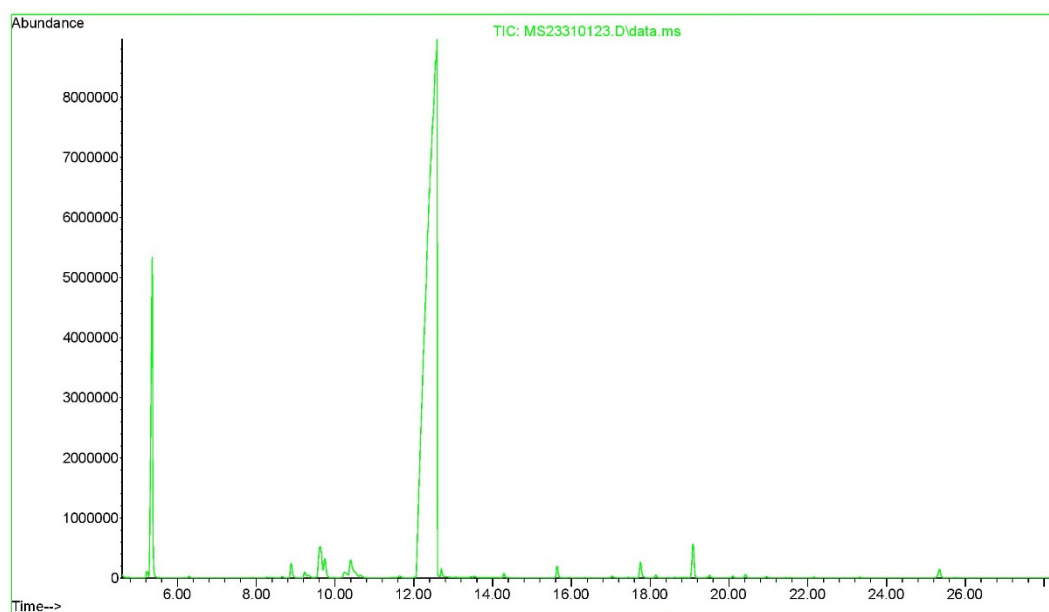


Figure 166 GC-MS chromatogram of *M. spicata* after 80 days of storage

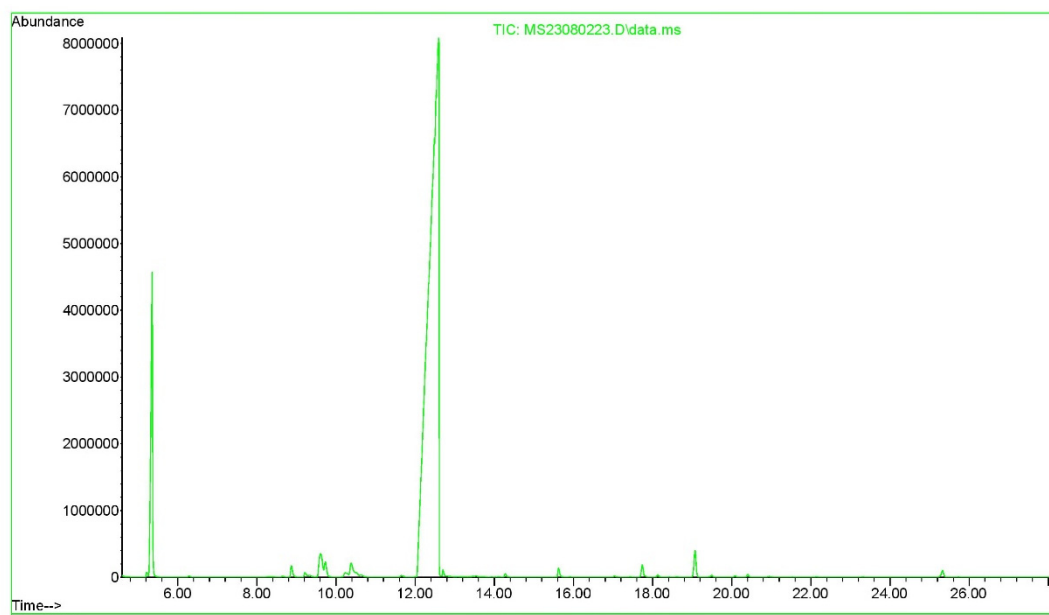


Figure 167 GC-MS chromatogram of *M. spicata* after 90 days of storage

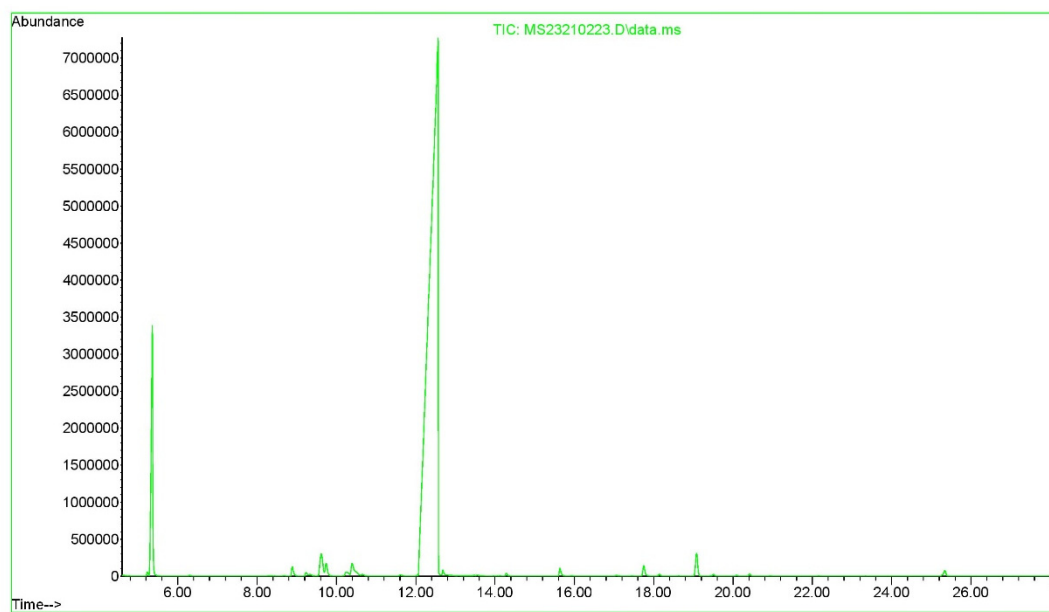


Figure 168 GC-MS chromatogram of *M. spicata* after 100 days of storage

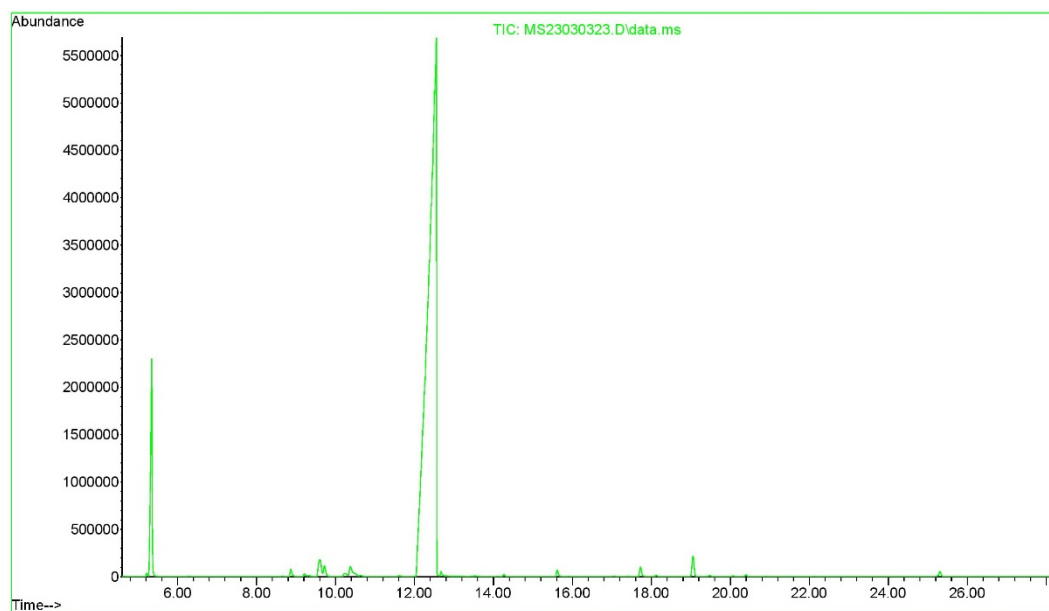


Figure 169 GC-MS chromatogram of *M. spicata* after 110 days of storage

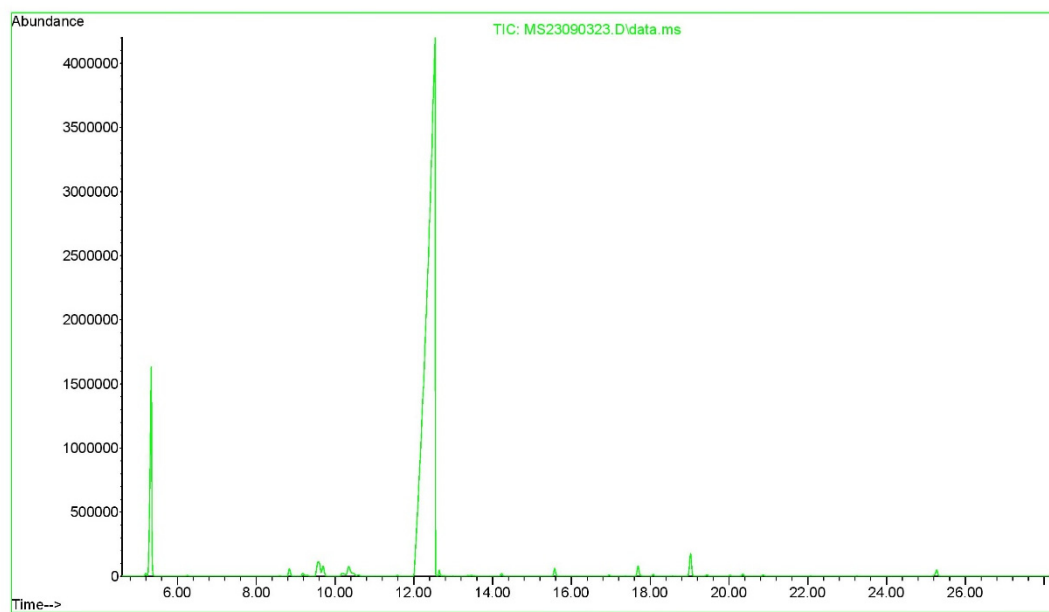


Figure 170 GC-MS chromatogram of *M. spicata* after 120 days of storage

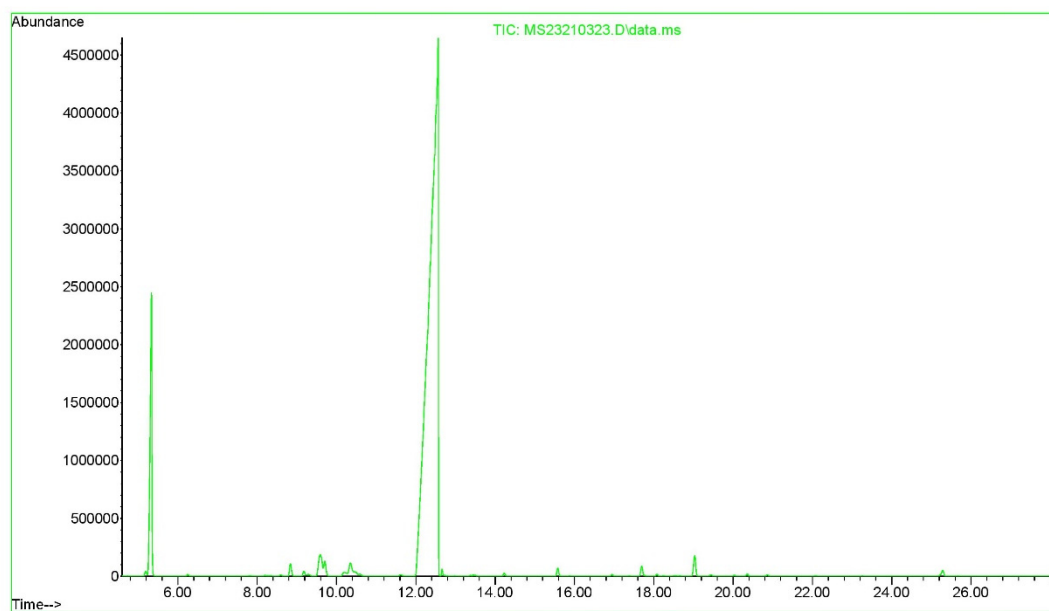


Figure 171 GC-MS chromatogram of *M. spicata* after 130 days of storage

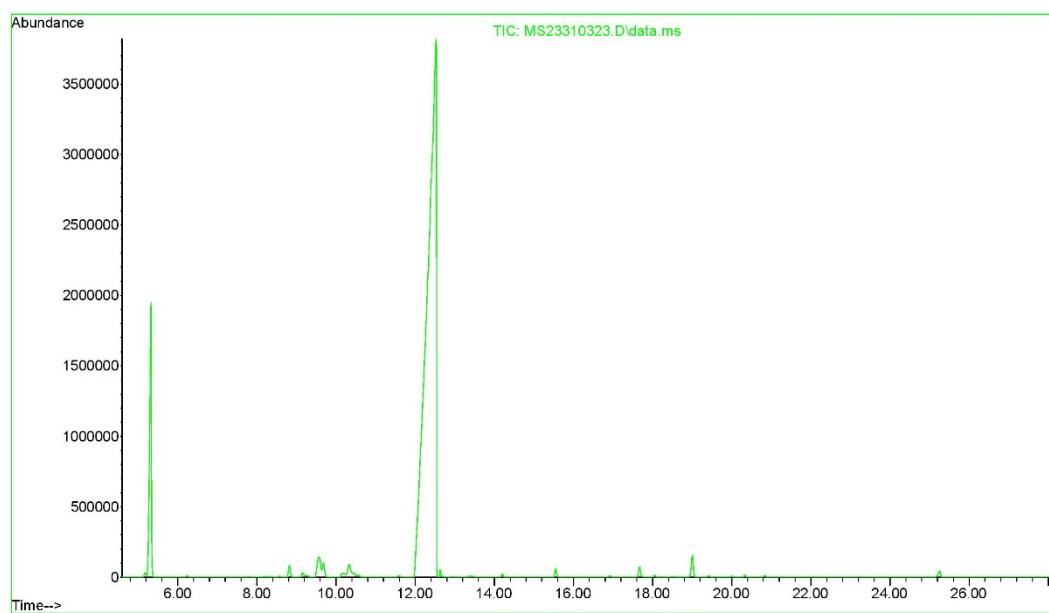


Figure 172 GC-MS chromatogram of *M. spicata* after 140 days of storage

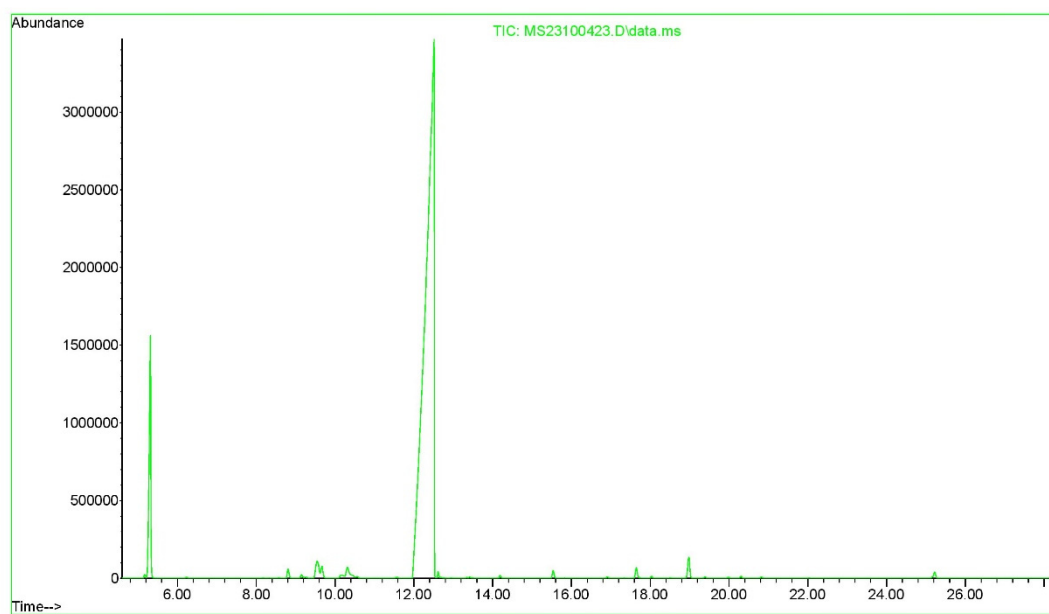


Figure 173 GC-MS chromatogram of *M. spicata* after 150 days of storage

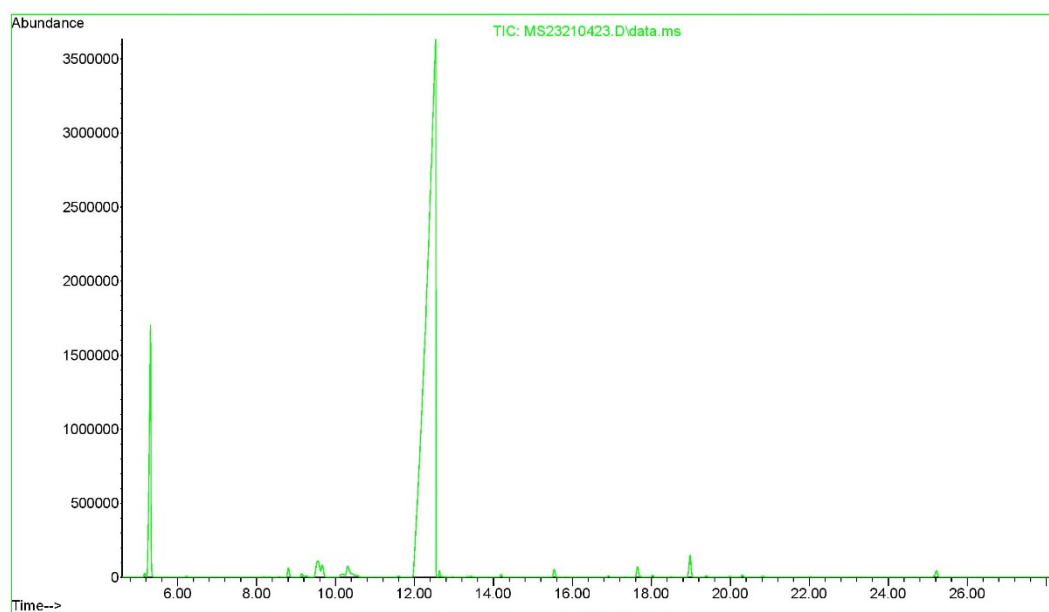


Figure 174 GC-MS chromatogram of *M. spicata* after 160 days of storage

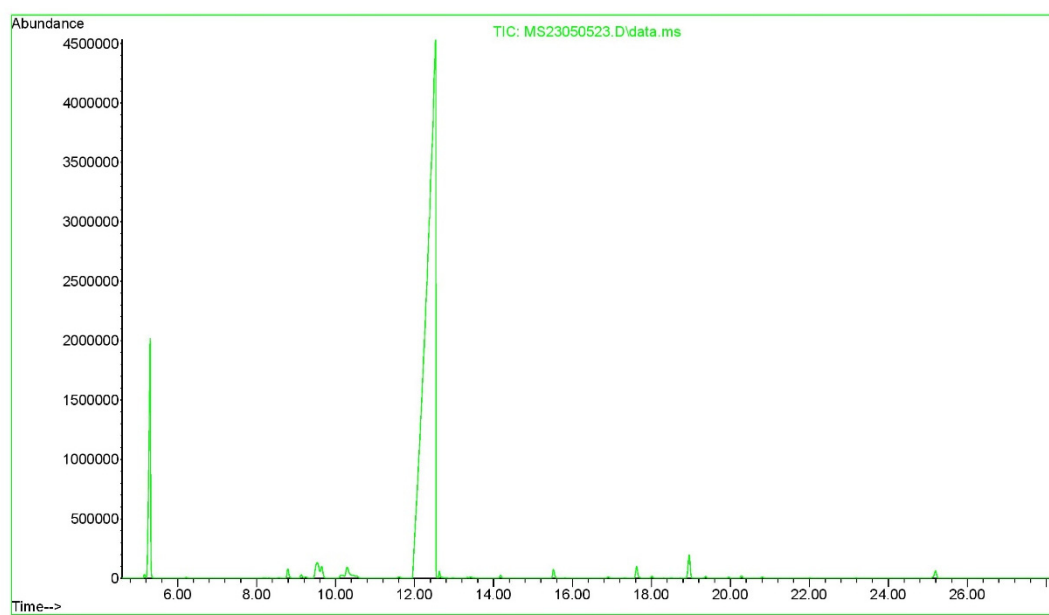


Figure 175 GC-MS chromatogram of *M. spicata* after 170 days of storage

### 5.3. GC-MS chromatograms of the *M. spicata* essential oil during storage in glass tubes sealed with cap under direct sunlight exposure for 6 months

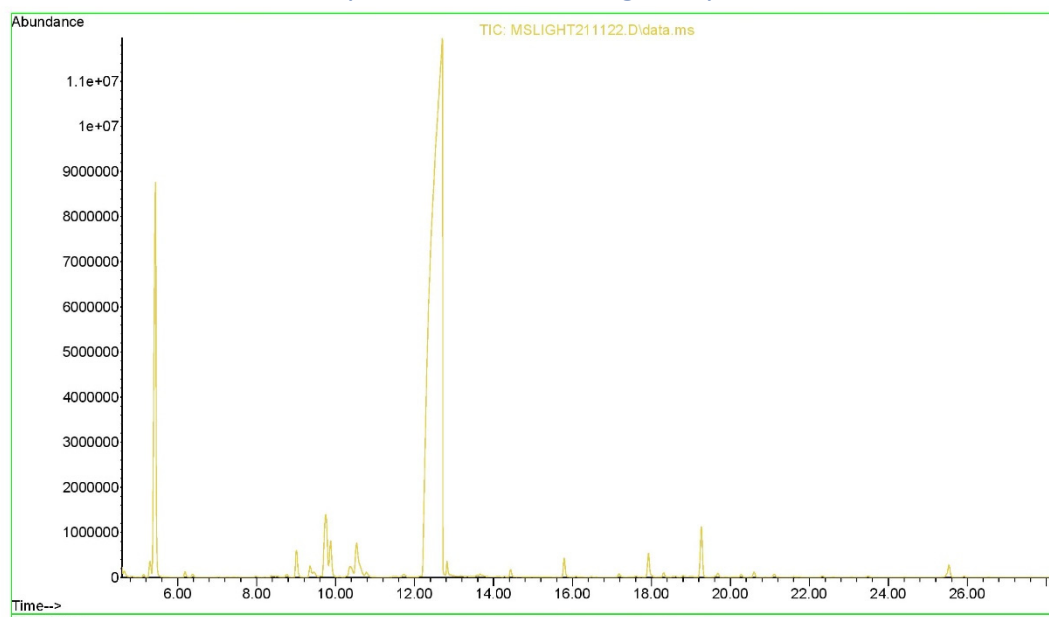


Figure 176 GC-MS chromatogram of *M. spicata* after 10 days of storage

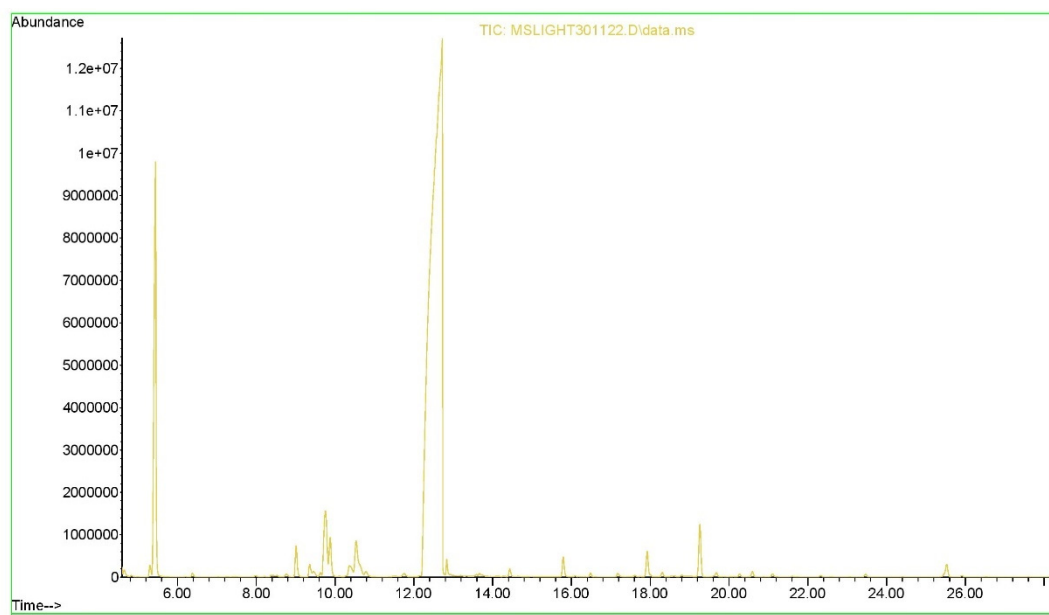


Figure 177 GC-MS chromatogram of *M. spicata* after 20 days of storage

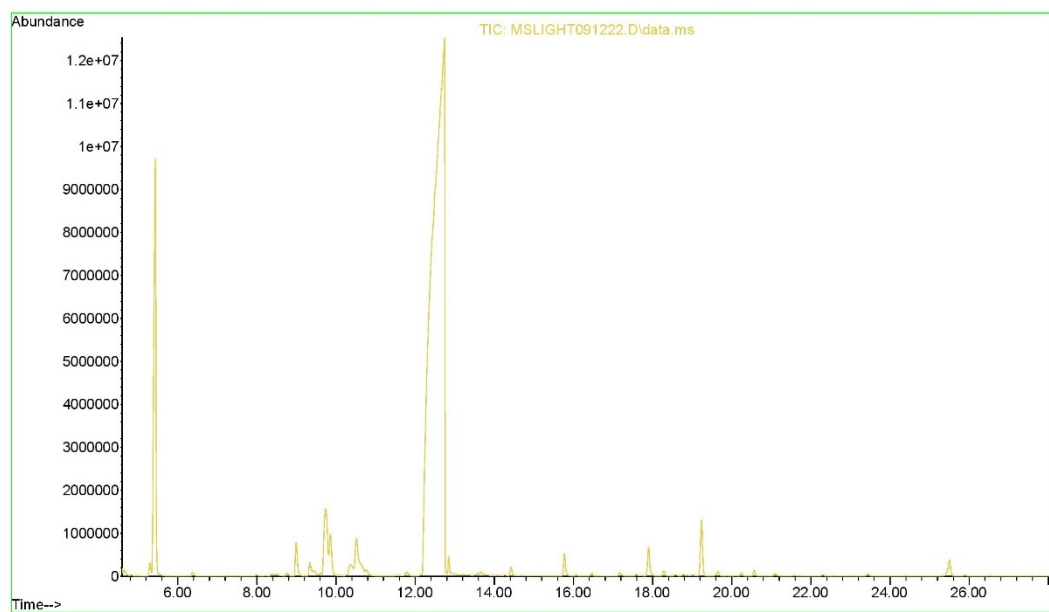


Figure 178 GC-MS chromatogram of *M. spicata* after 30 days of storage

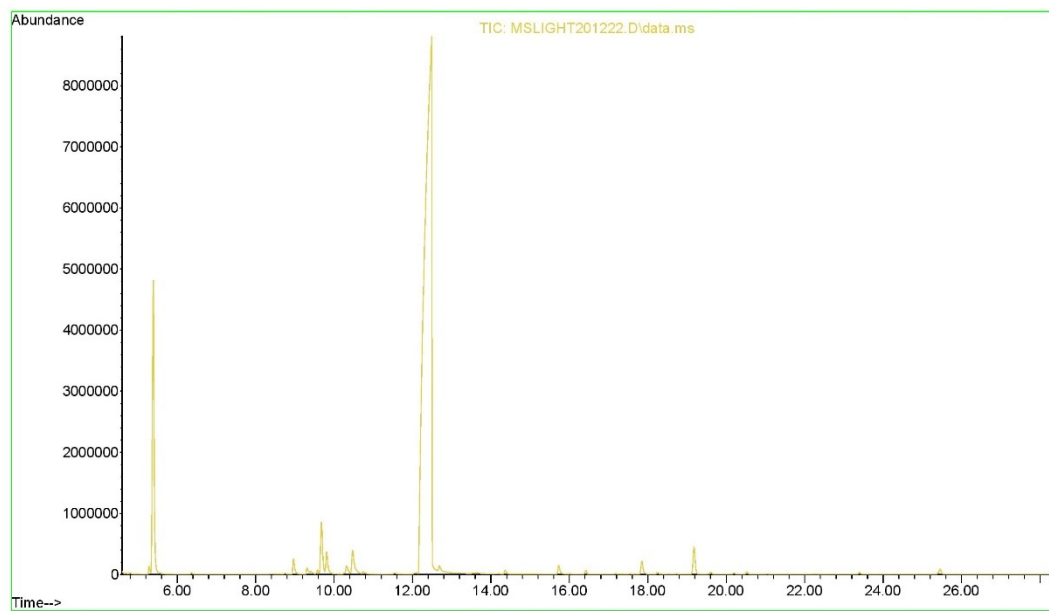


Figure 179 GC-MS chromatogram of *M. spicata* after 40 days of storage

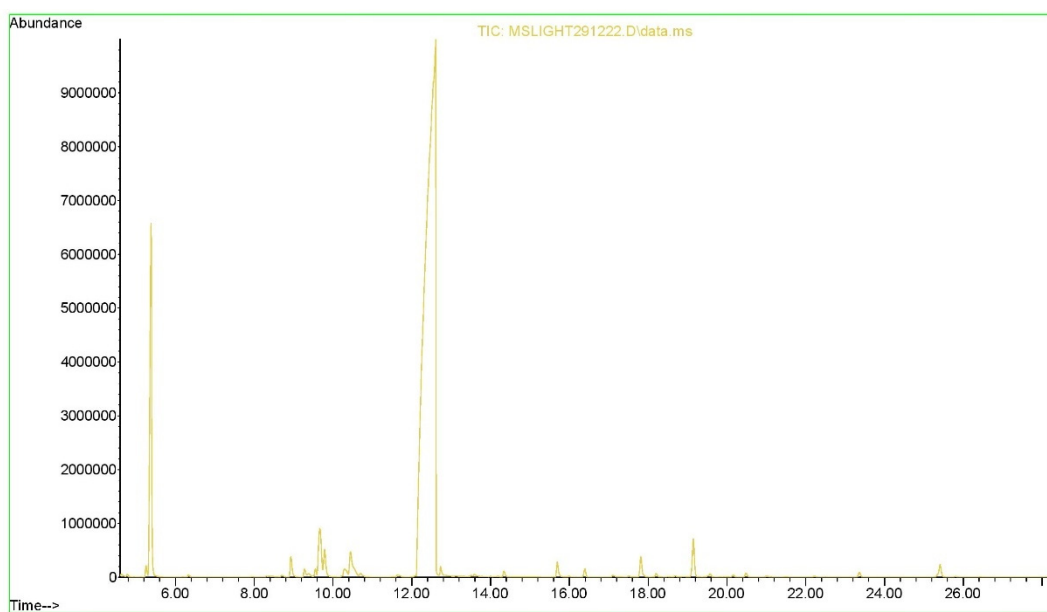


Figure 180 GC-MS chromatogram of *M. spicata* after 50 days of storage

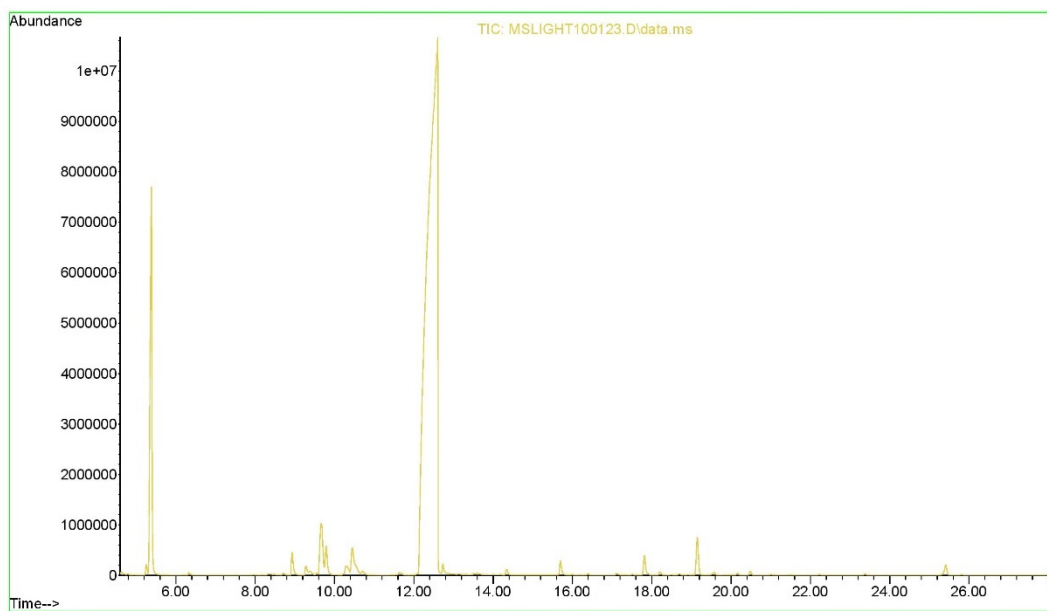


Figure 181 GC-MS chromatogram of *M. spicata* after 60 days of storage

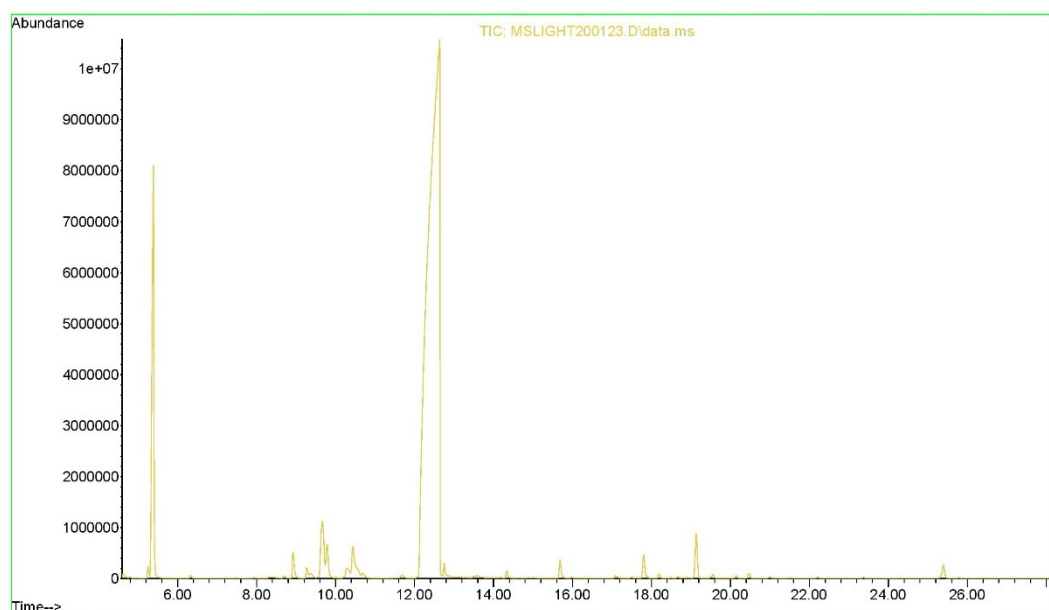


Figure 182 GC-MS chromatogram of *M. spicata* after 70 days of storage

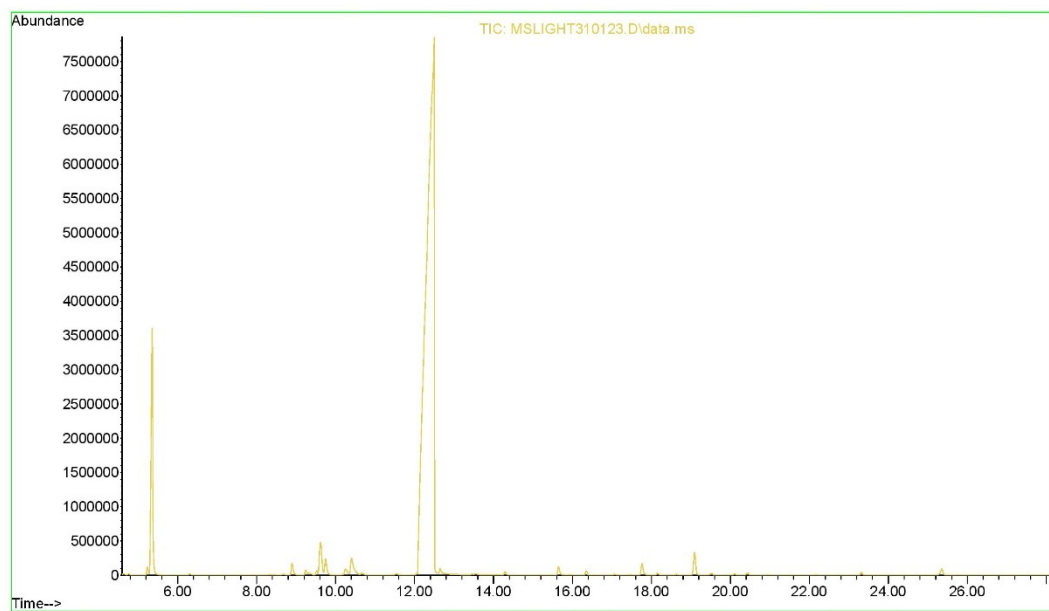


Figure 183 GC-MS chromatogram of *M. spicata* after 80 days of storage

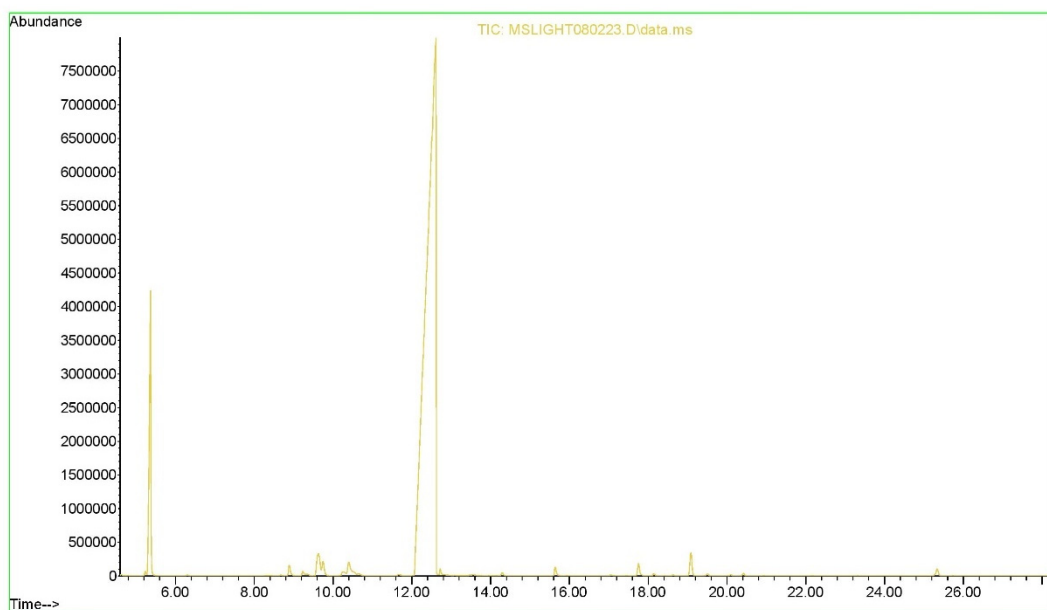


Figure 184 GC-MS chromatogram of *M. spicata* after 90 days of storage

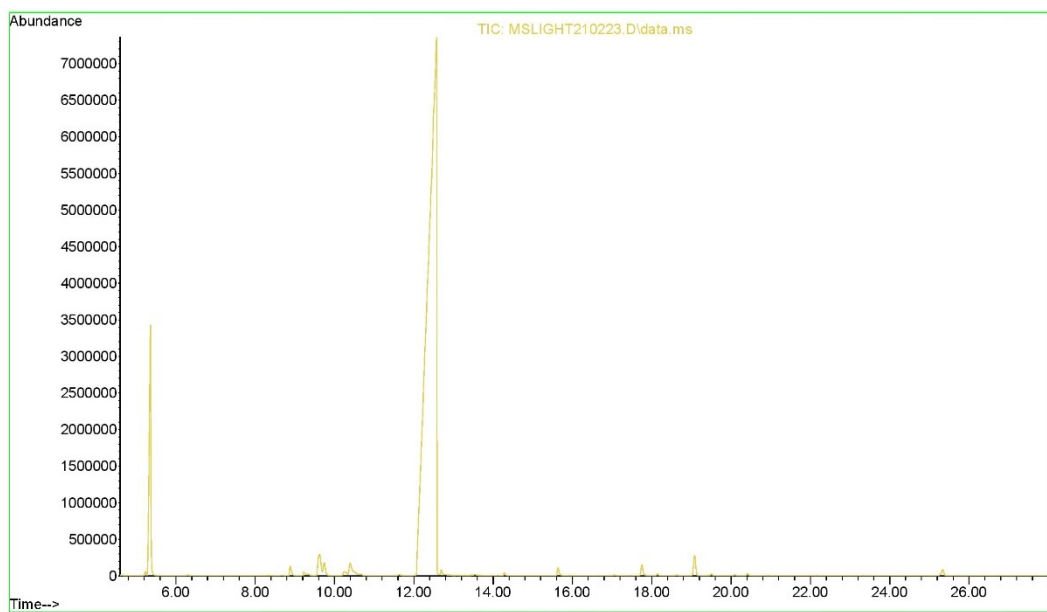


Figure 185 GC-MS chromatogram of *M. spicata* after 100 days of storage

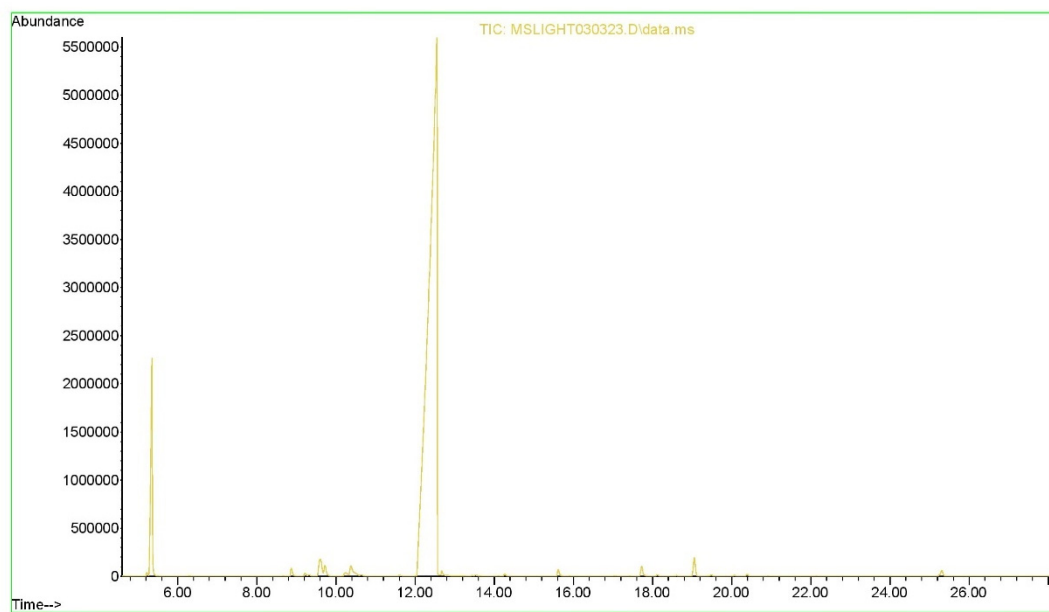


Figure 186 GC-MS chromatogram of *M. spicata* after 110 days of storage

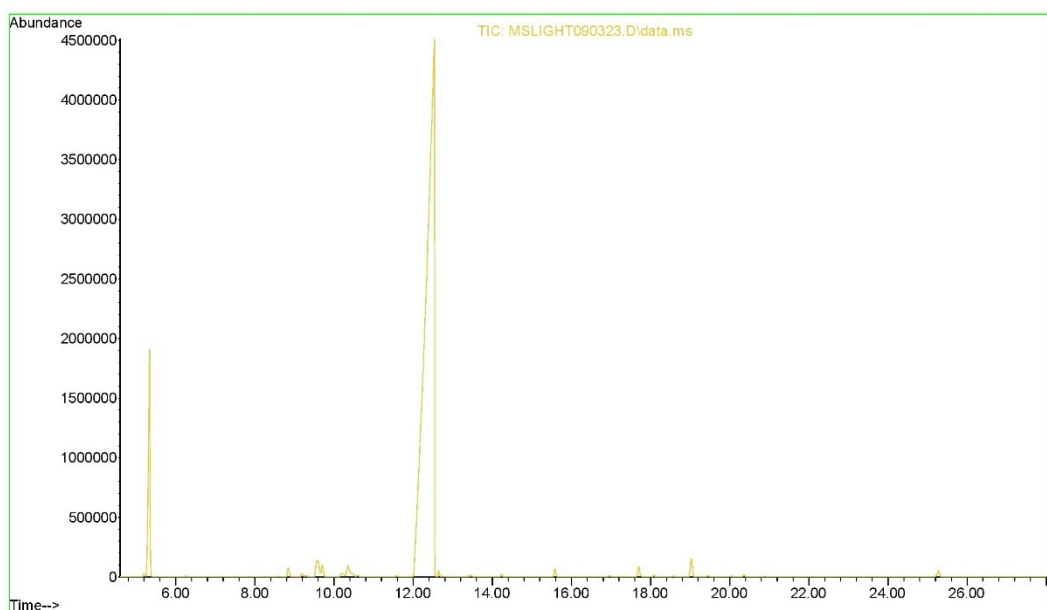


Figure 187 GC-MS chromatogram of *M. spicata* after 120 days of storage

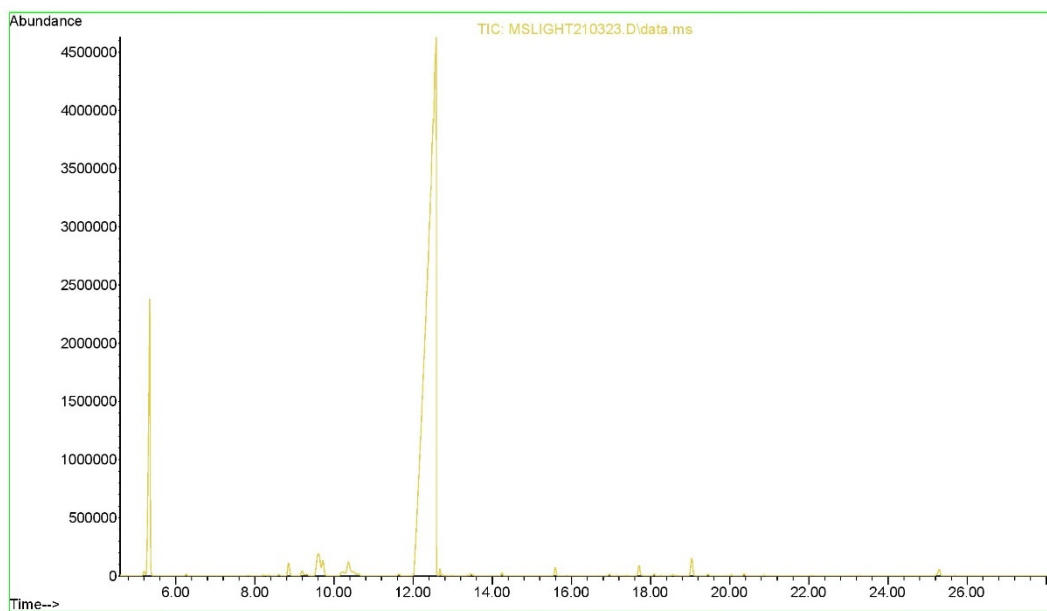


Figure 188 GC-MS chromatogram of *M. spicata* after 130 days of storage

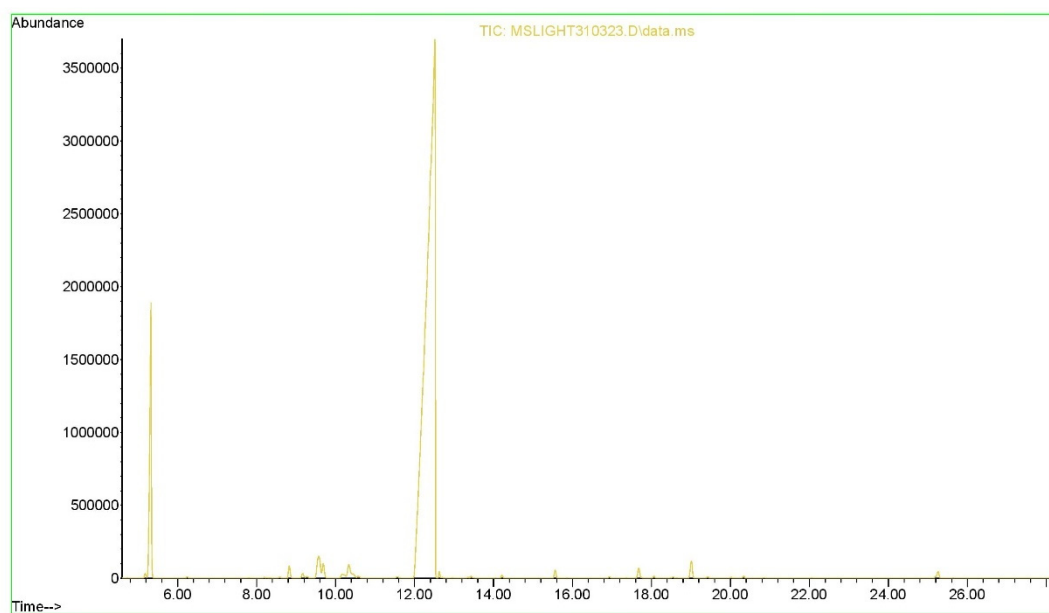


Figure 189 GC-MS chromatogram of *M. spicata* after 140 days of storage

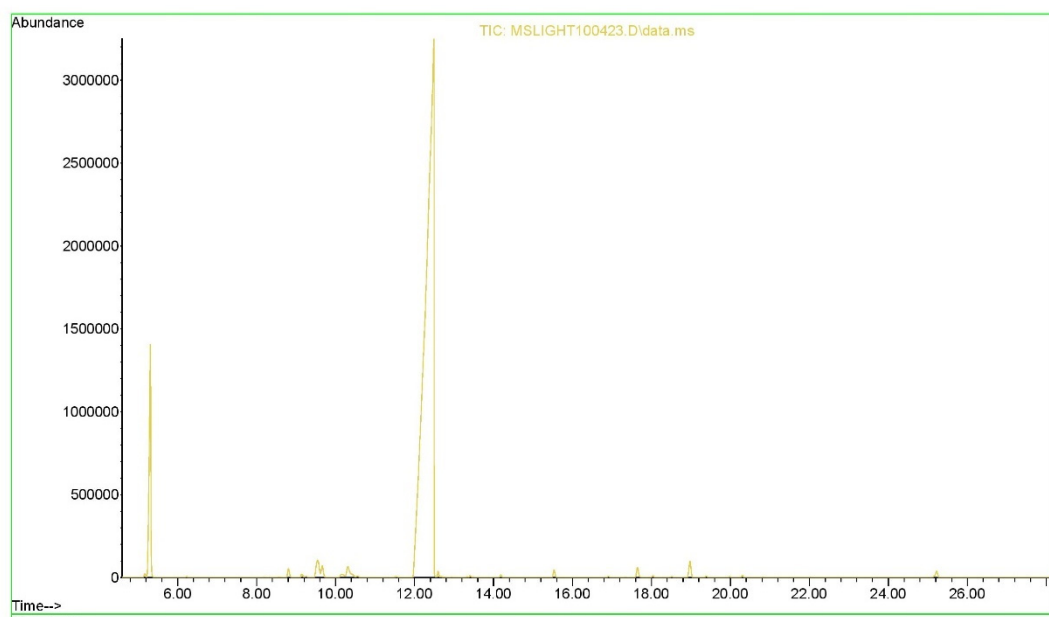


Figure 190 GC-MS chromatogram of *M. spicata* after 150 days of storage

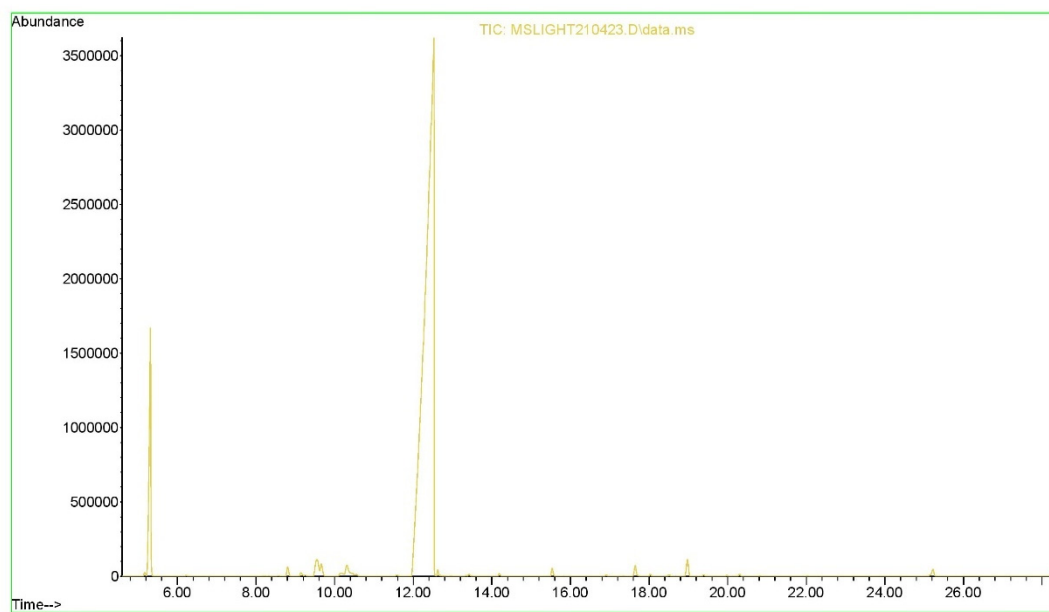


Figure 191 GC-MS chromatogram of *M. spicata* after 160 days of storage

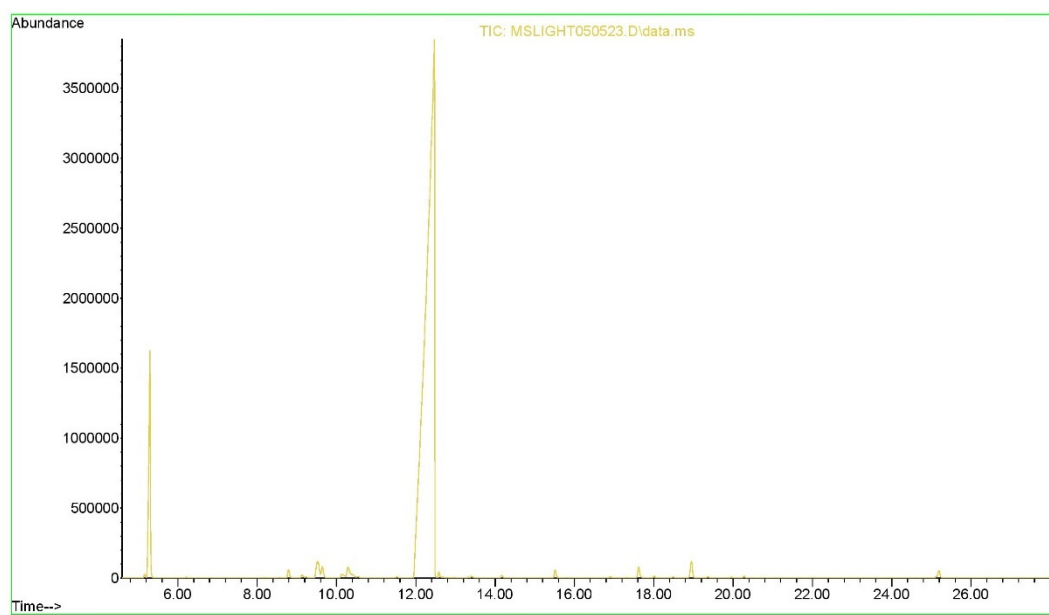


Figure 192 GC-MS chromatogram of *M. spicata* after 170 days of storage

#### 5.4. GC-MS chromatograms of the *M. spicata* essential oil during storage in sealed glass ampoules at 35 °C for 3 months

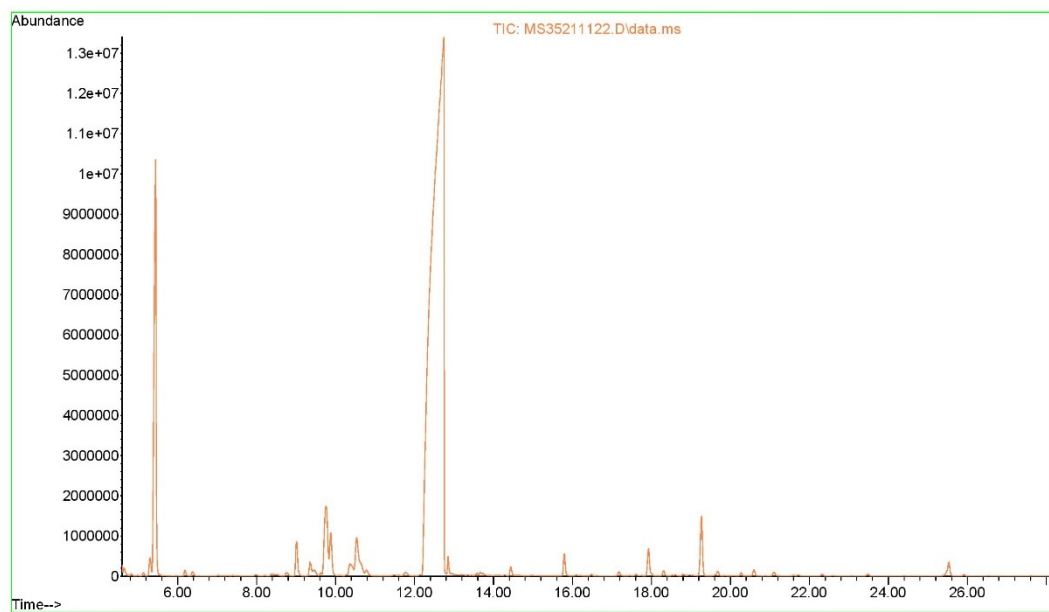


Figure 193 GC-MS chromatogram of *M. spicata* after 10 days of storage

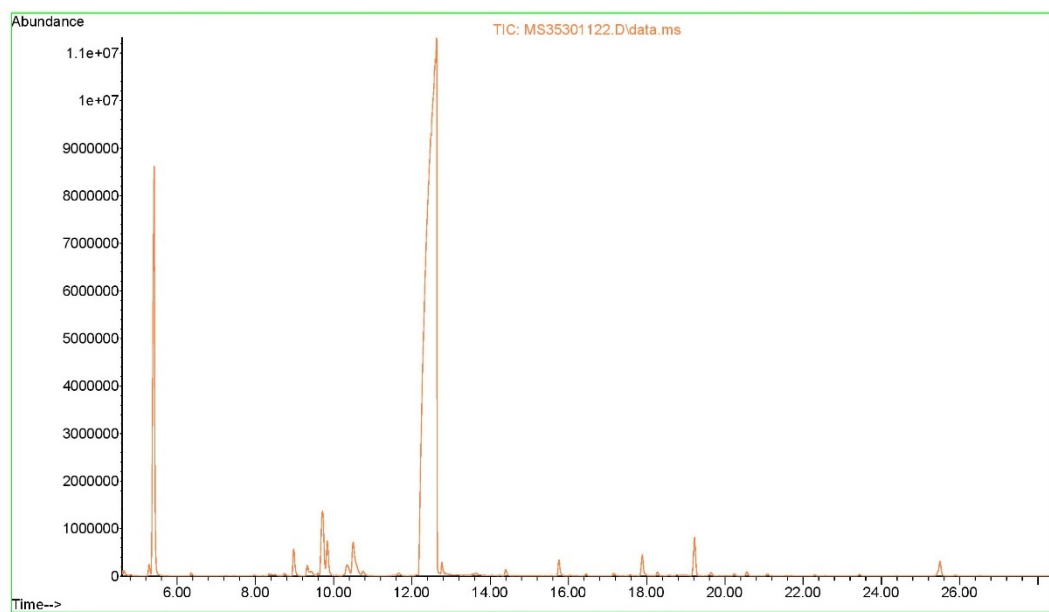


Figure 194 GC-MS chromatogram of *M. spicata* after 20 days of storage

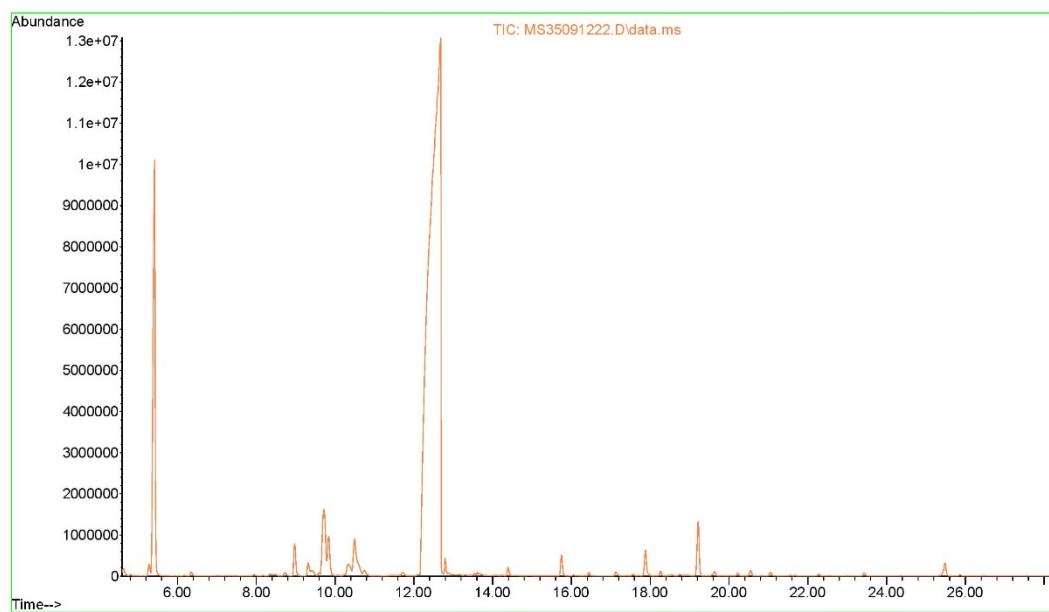


Figure 195 GC-MS chromatogram of *M. spicata* after 30 days of storage

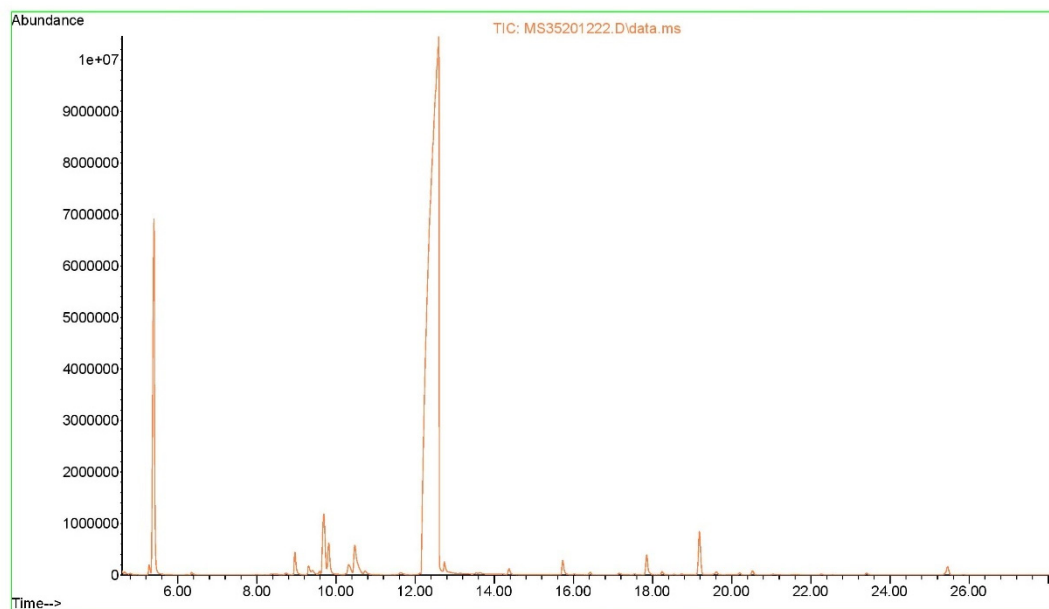


Figure 196 GC-MS chromatogram of *M. spicata* after 40 days of storage

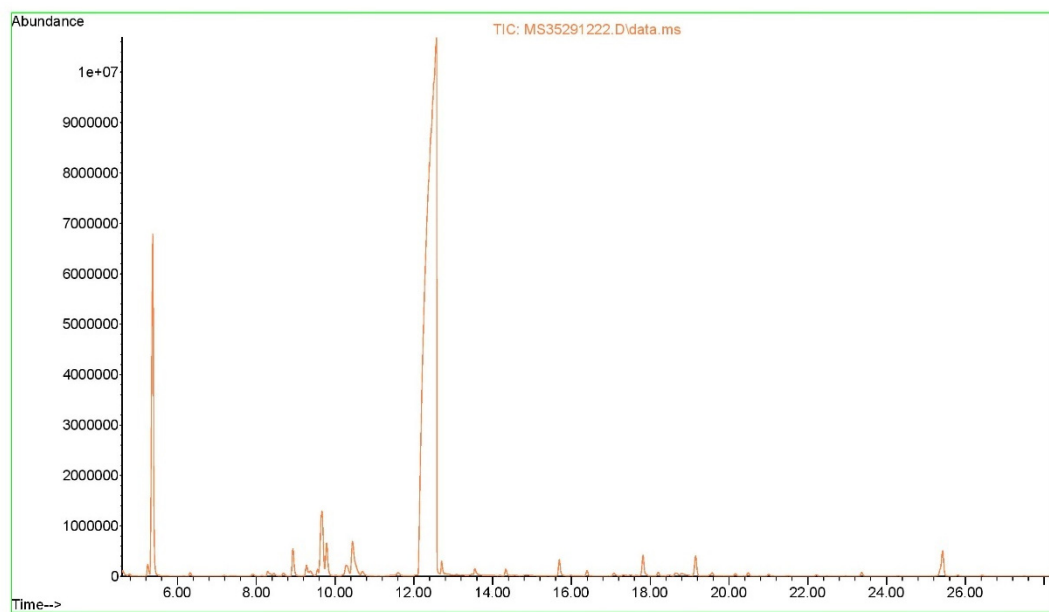


Figure 197 GC-MS chromatogram of *M. spicata* after 50 days of storage

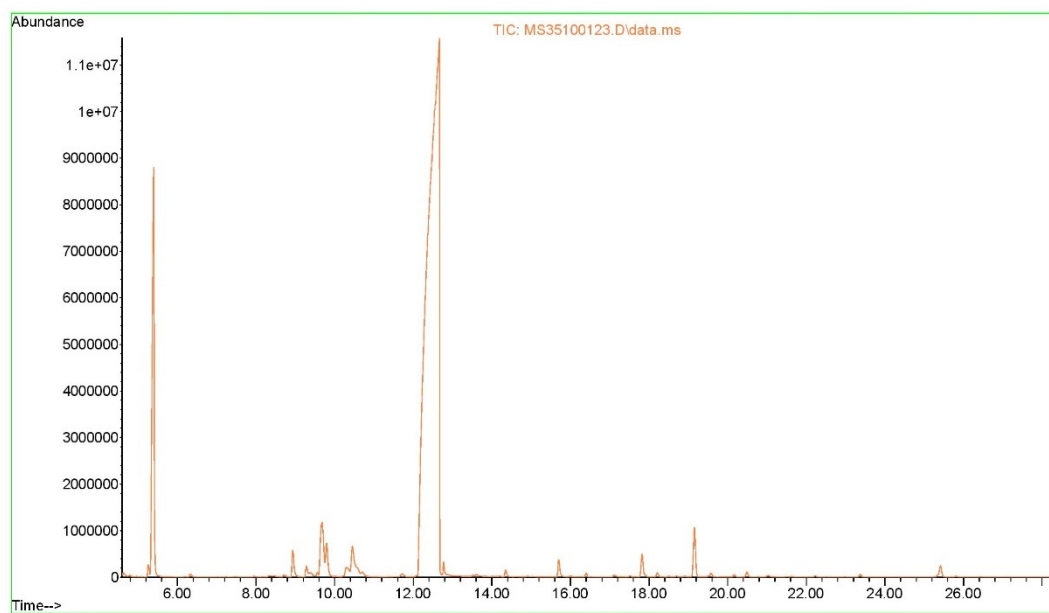


Figure 198 GC-MS chromatogram of *M. spicata* after 60 days of storage

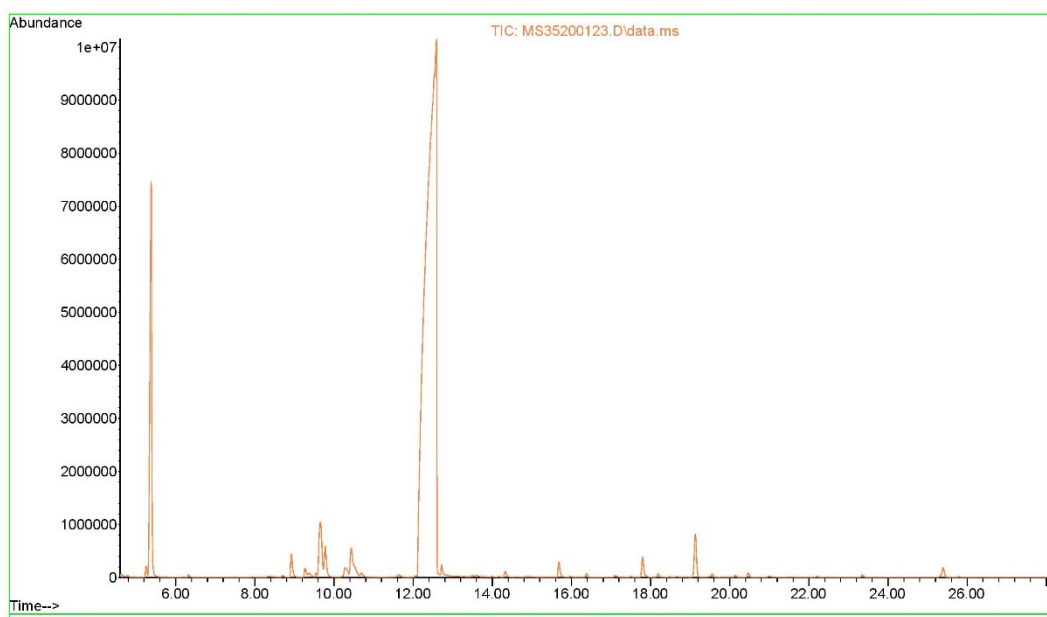


Figure 199 GC-MS chromatogram of *M. spicata* after 70 days of storage

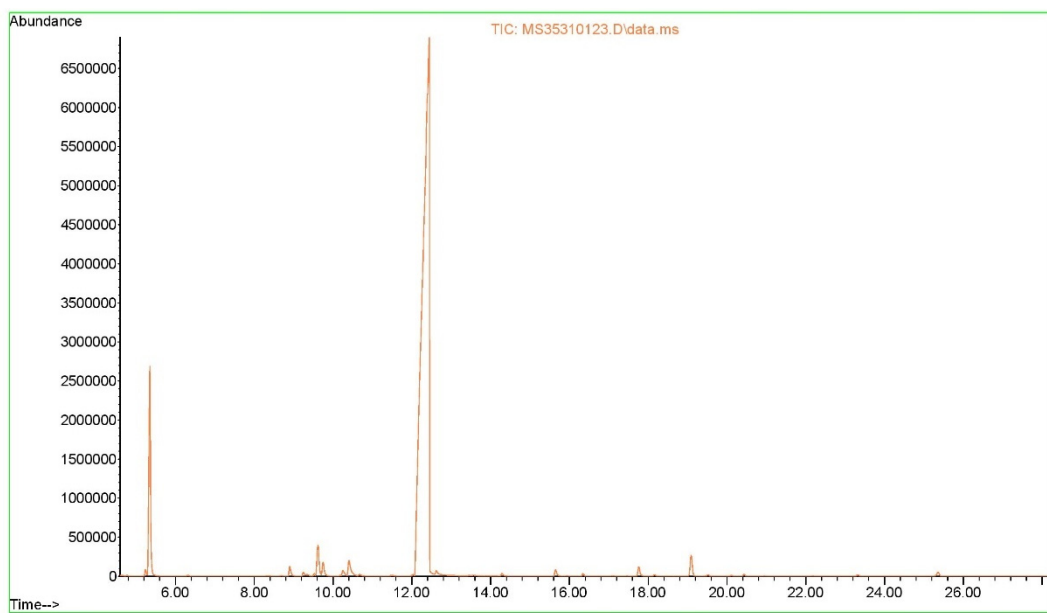


Figure 200 GC-MS chromatogram of *M. spicata* after 80 days of storage

### 5.5. GC-MS chromatograms of the *M. spicata* essential oil during storage in sealed glass ampoules at 45 °C for 3 months

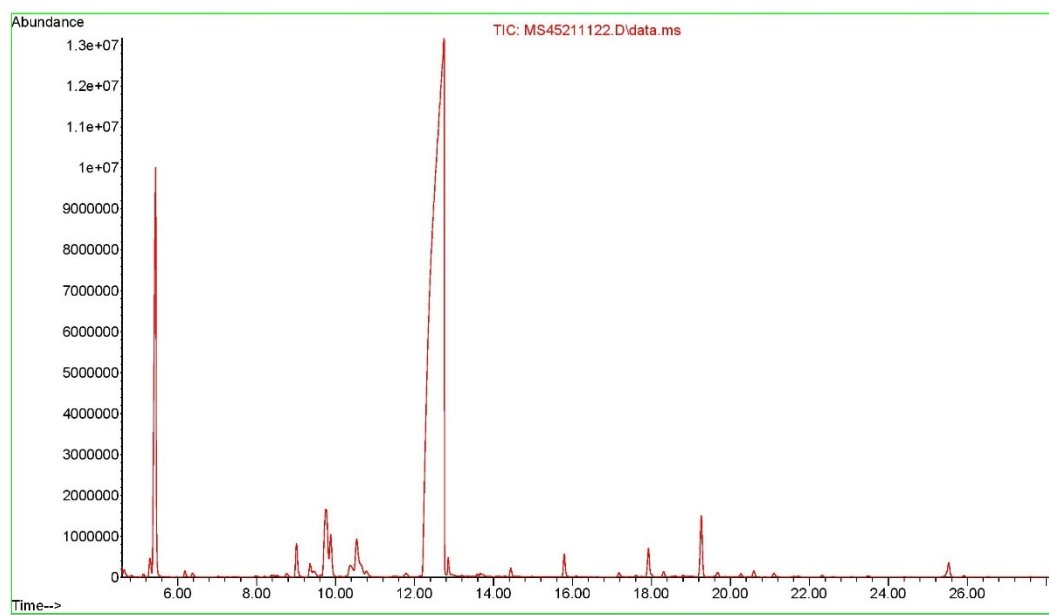


Figure 201 GC-MS chromatogram of *M. spicata* after 10 days of storage

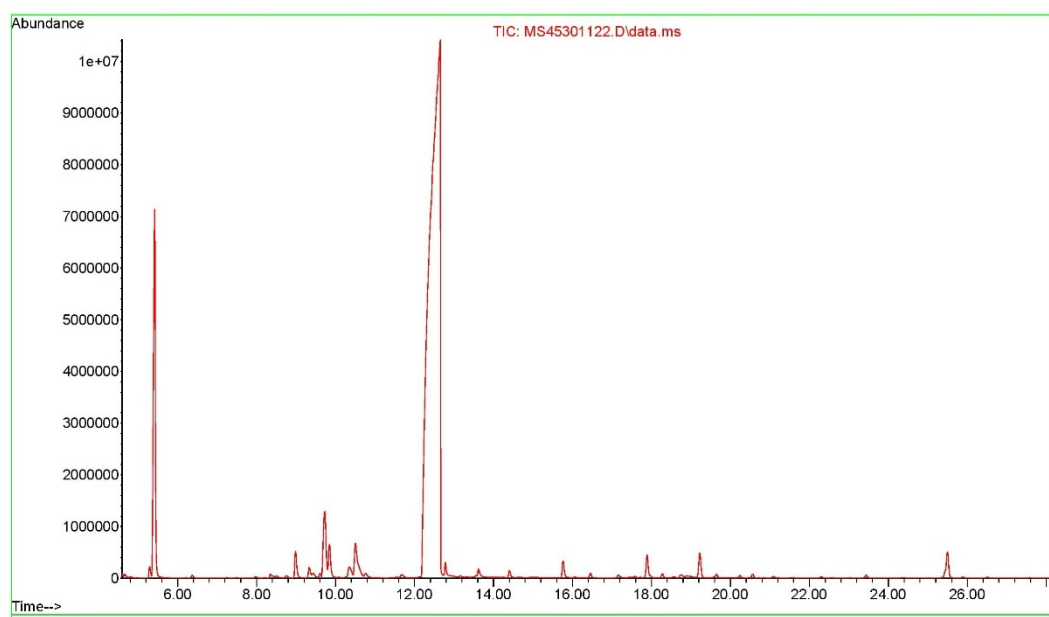


Figure 202 GC-MS chromatogram of *M. spicata* after 20 days of storage

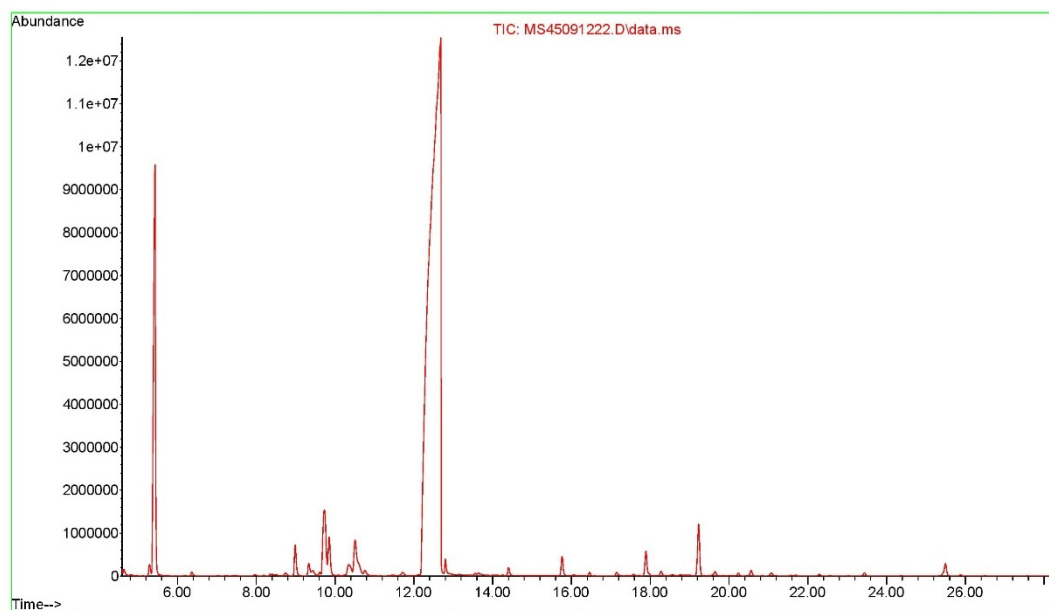


Figure 203 GC-MS chromatogram of *M. spicata* after 30 days of storage

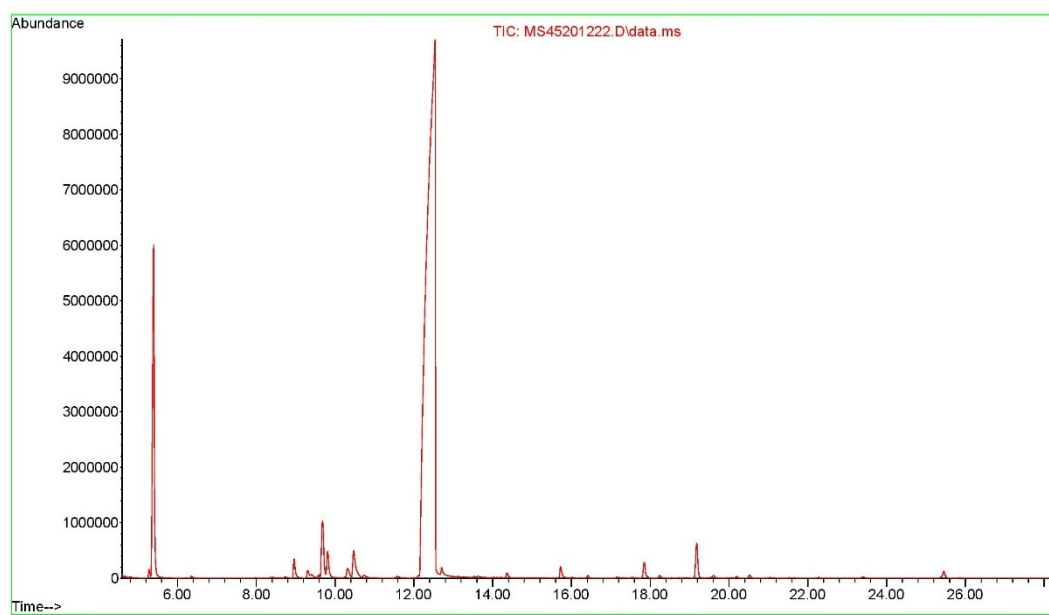


Figure 204 GC-MS chromatogram of *M. spicata* after 40 days of storage

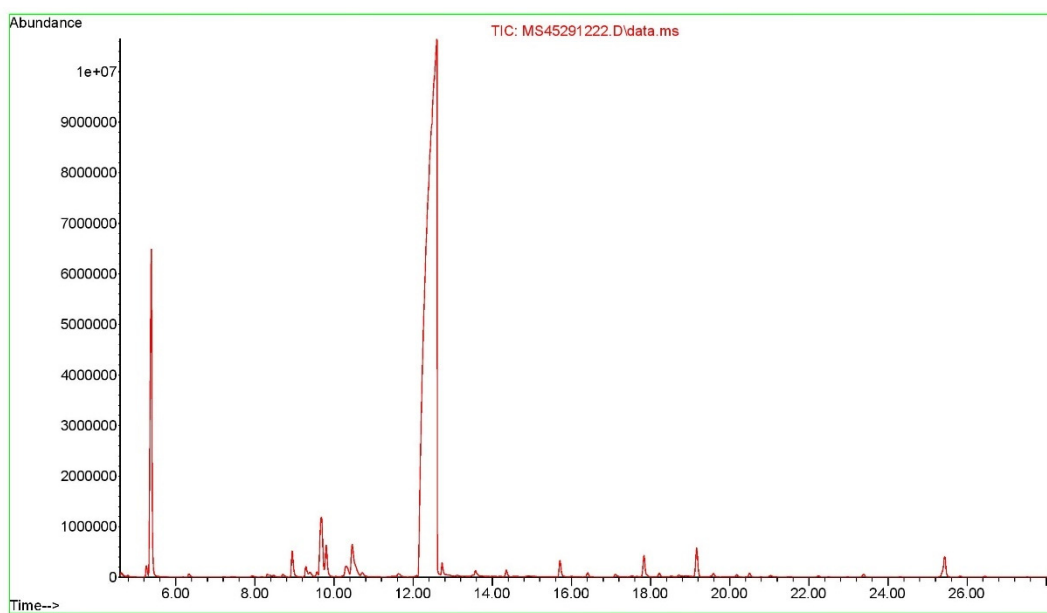


Figure 205 GC-MS chromatogram of *M. spicata* after 50 days of storage

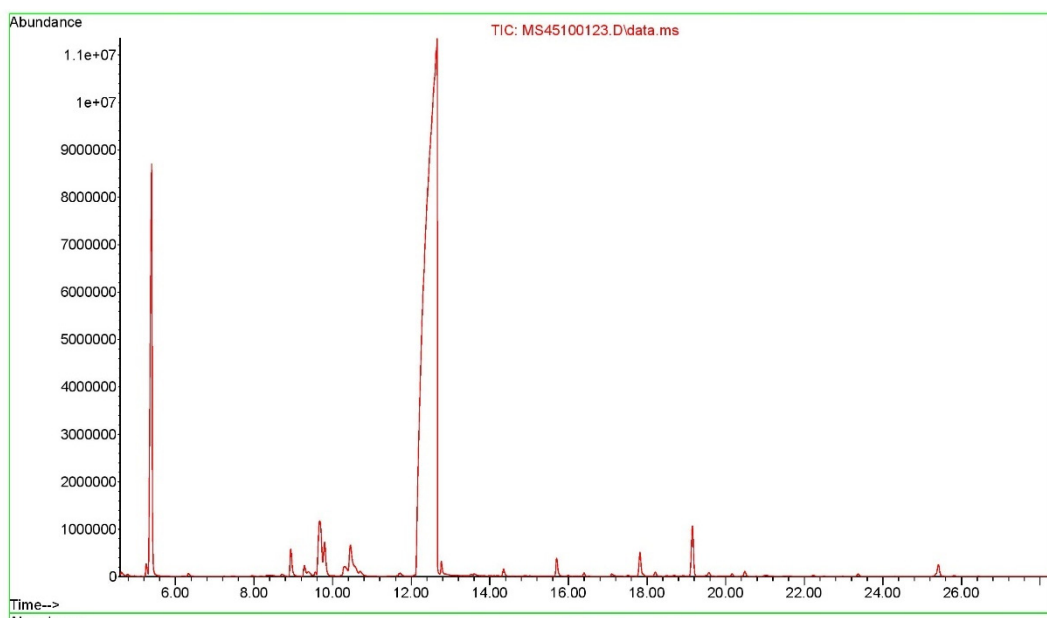


Figure 206 GC-MS chromatogram of *M. spicata* after 60 days of storage

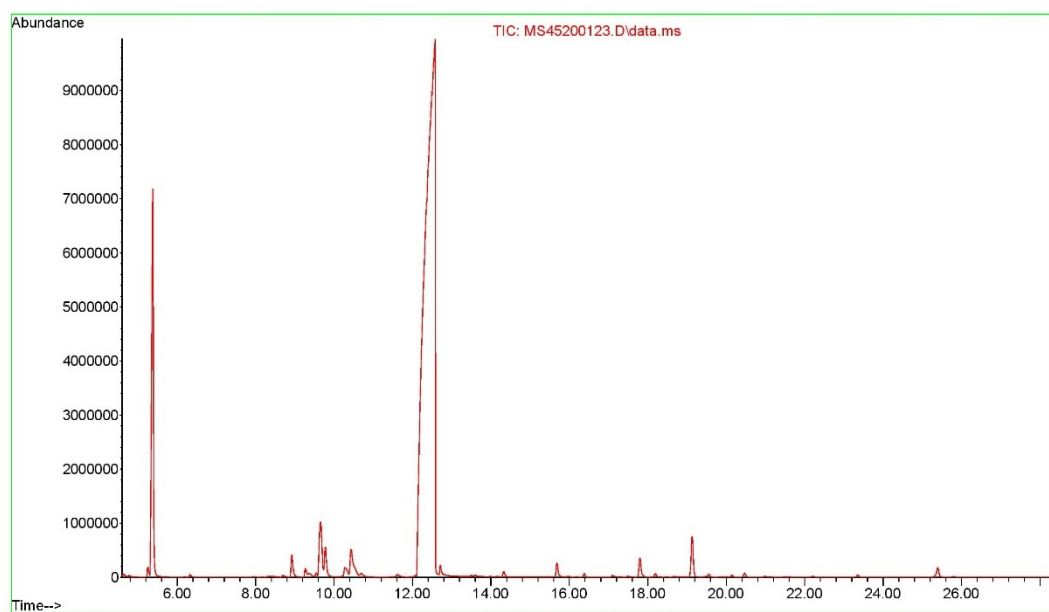


Figure 207 GC-MS chromatogram of *M. spicata* after 70 days of storage

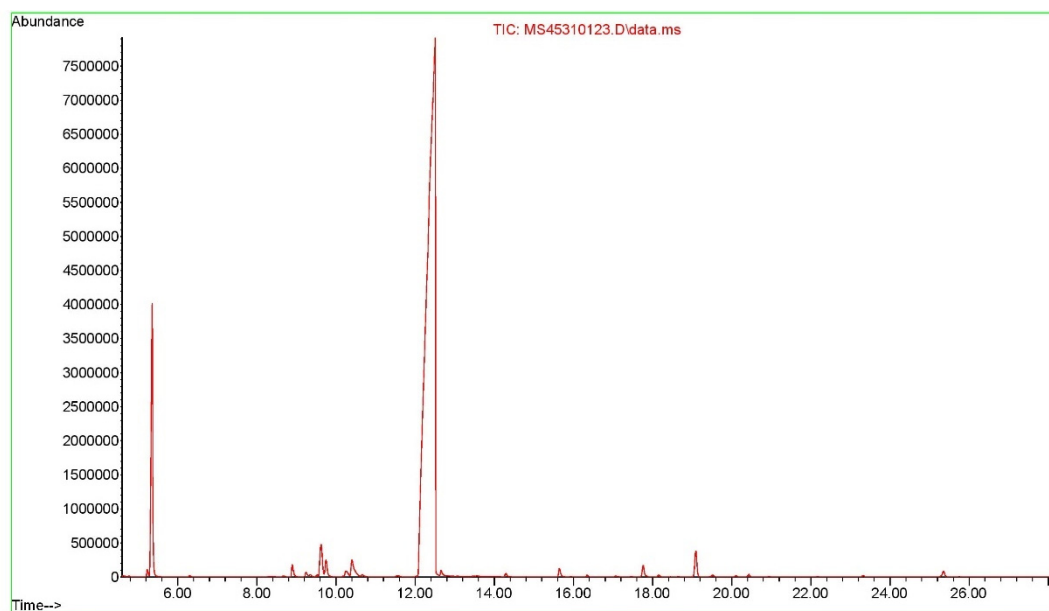


Figure 208 GC-MS chromatogram of *M. spicata* after 80 days of storage

## 5.6. GC-MS chromatograms of the *M. spicata* essential oil during storage in glass tubes sealed with cap at 35 °C for 3 months

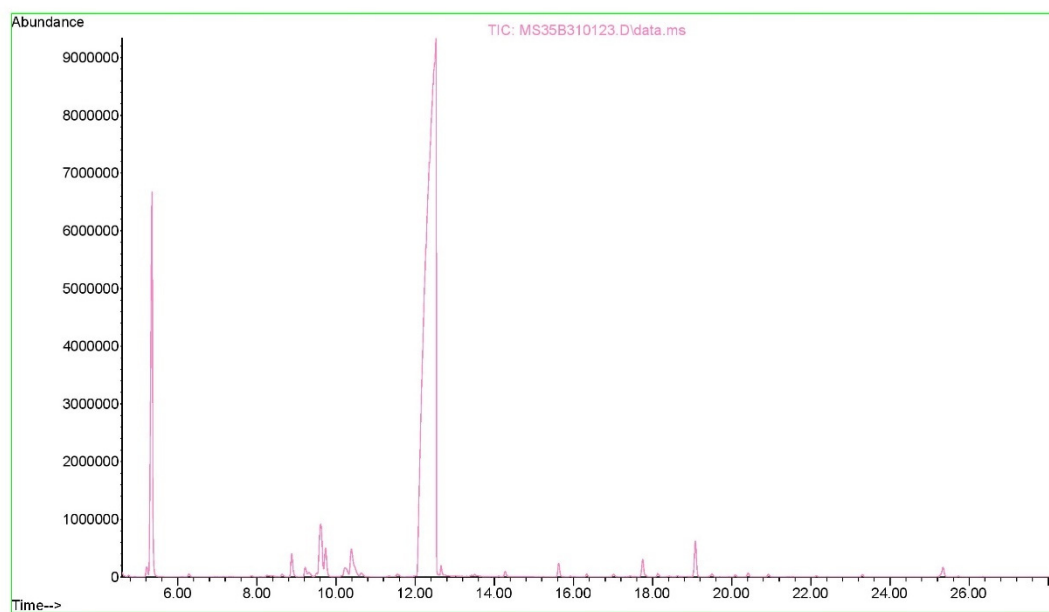


Figure 209 GC-MS chromatogram of *M. spicata* after 10 days of storage

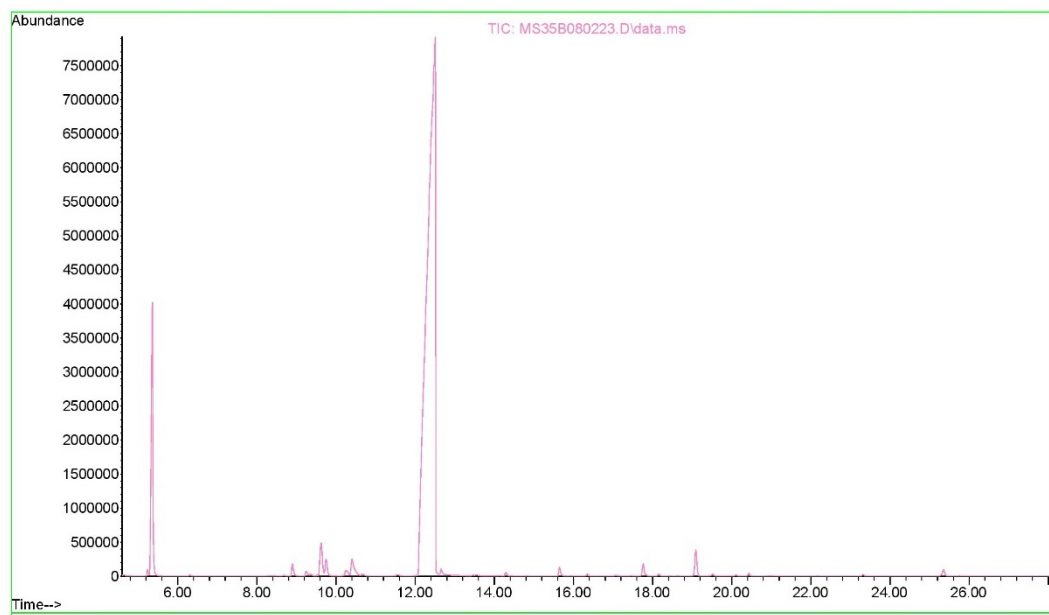


Figure 210 GC-MS chromatogram of *M. spicata* after 20 days of storage

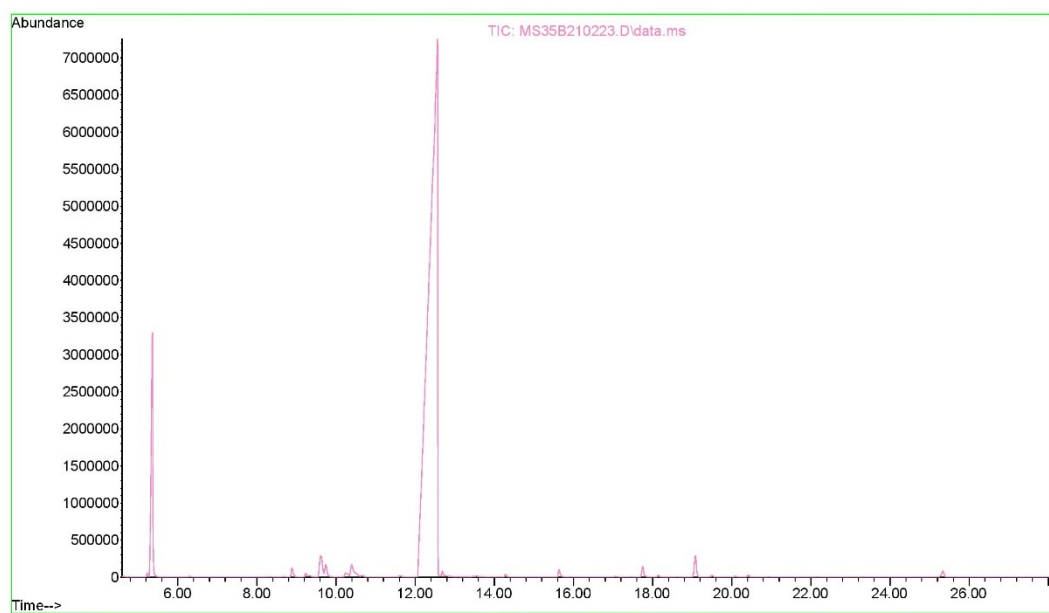


Figure 211 GC-MS chromatogram of *M. spicata* after 30 days of storage

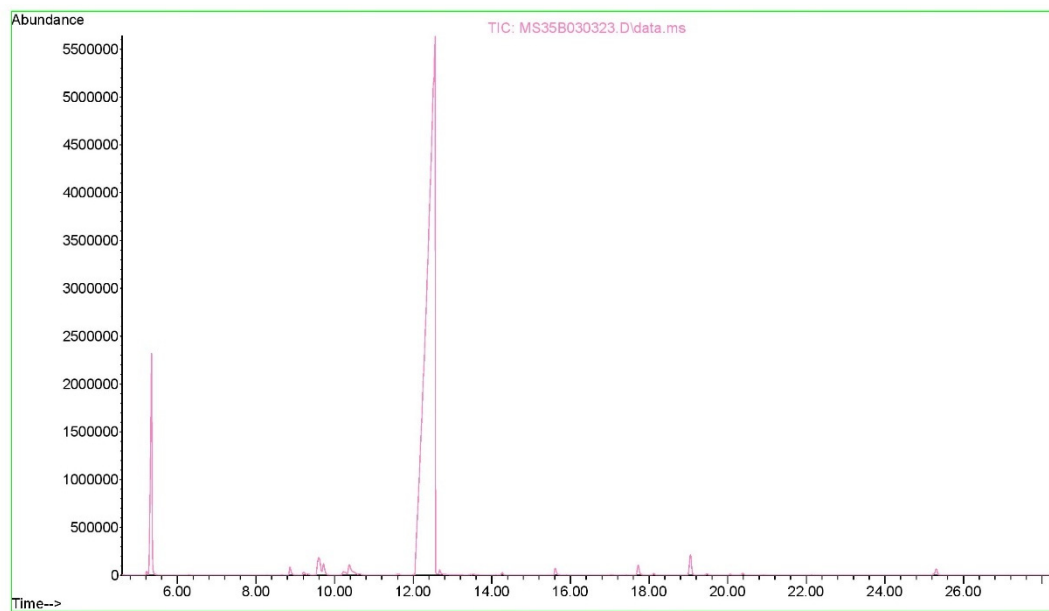


Figure 212 GC-MS chromatogram of *M. spicata* after 40 days of storage

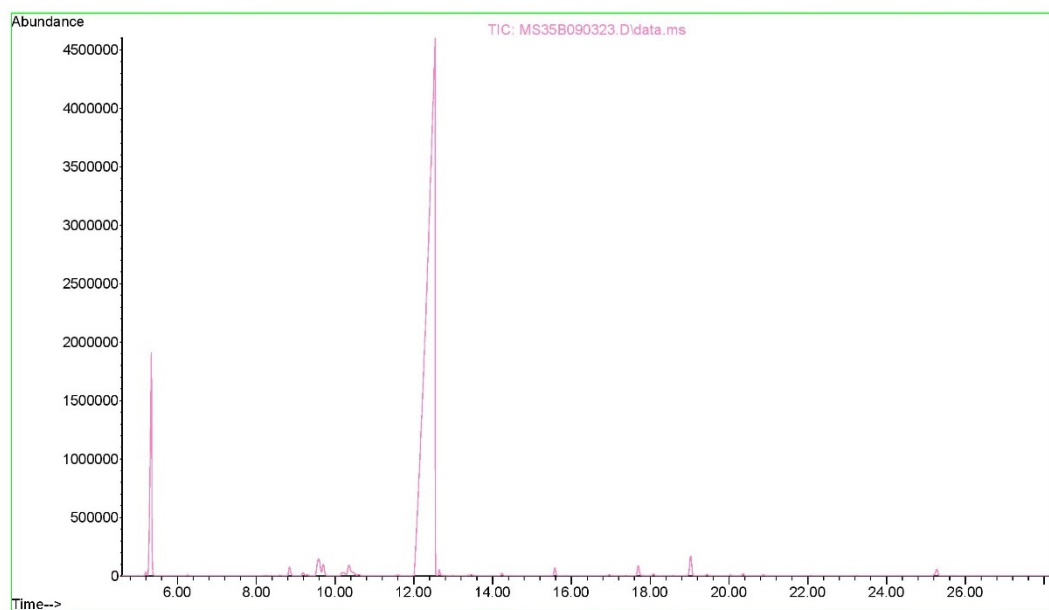


Figure 213 GC-MS chromatogram of *M. spicata* after 50 days of storage

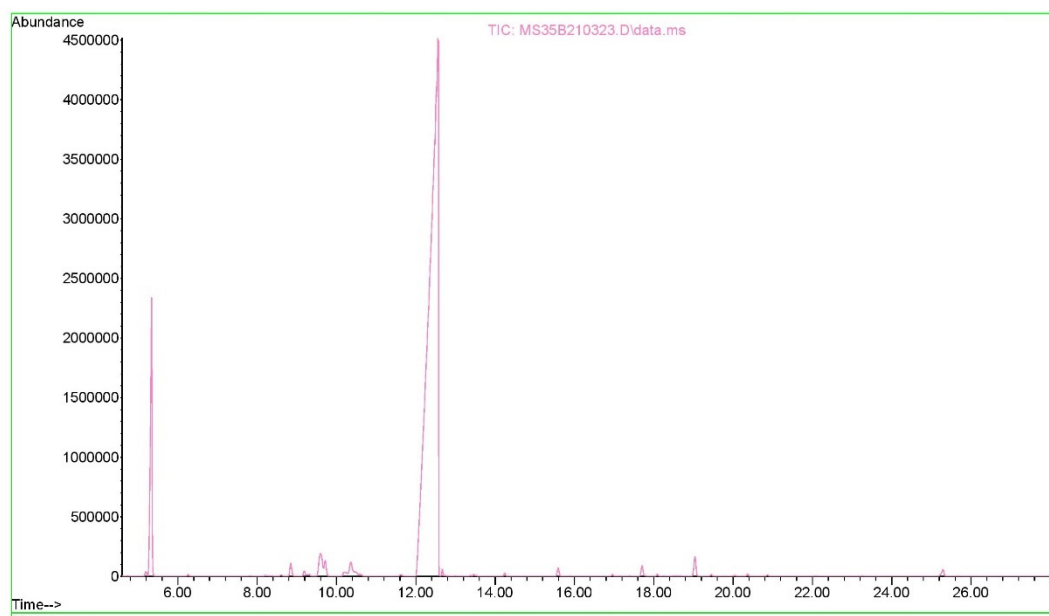


Figure 214 GC-MS chromatogram of *M. spicata* after 60 days of storage

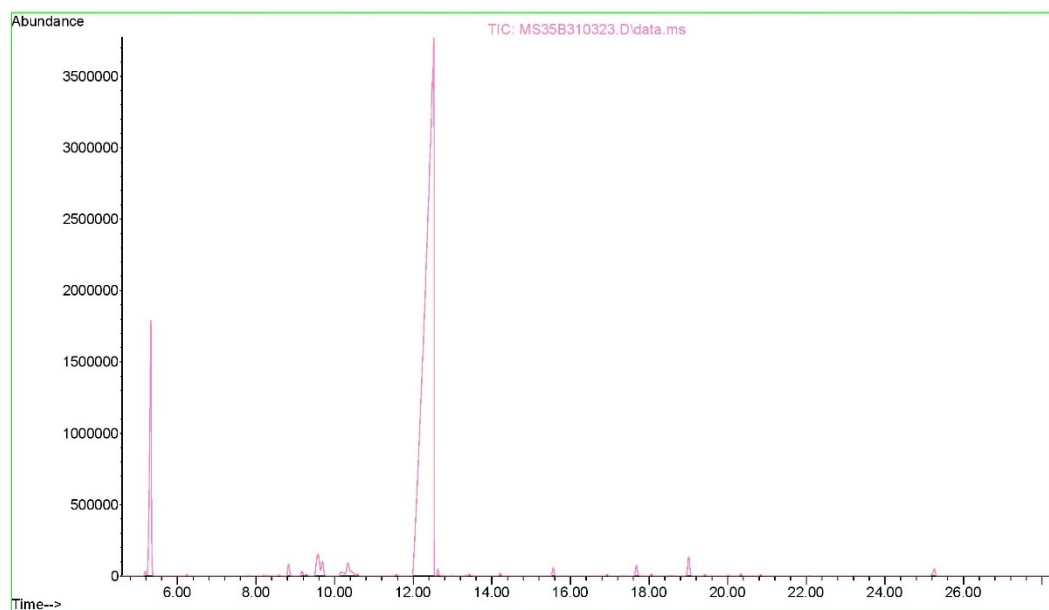


Figure 215 GC-MS chromatogram of *M. spicata* after 70 days of storage

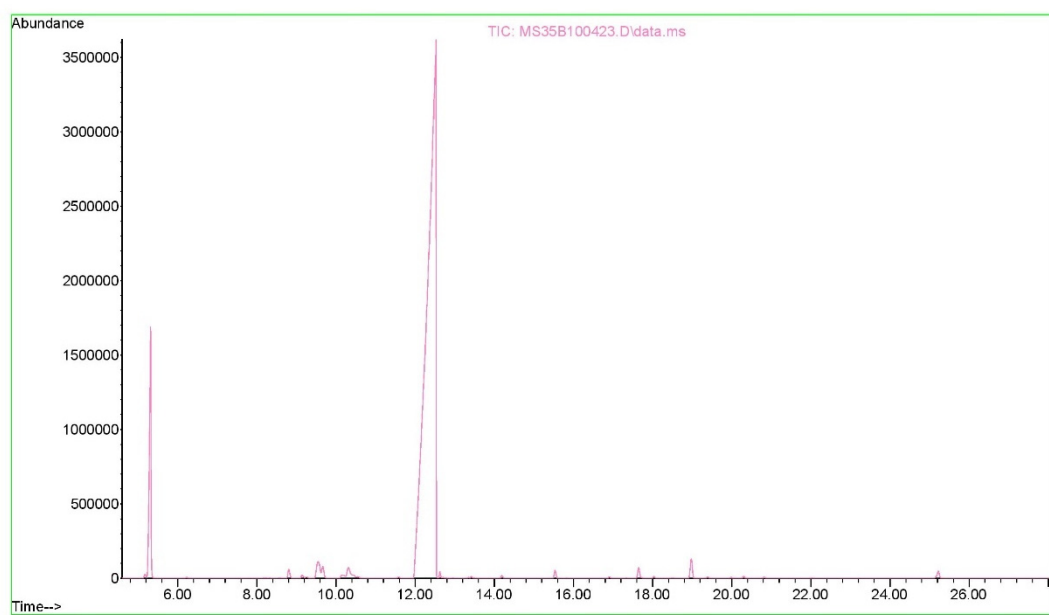


Figure 216 GC-MS chromatogram of *M. spicata* after 80 days of storage

### 5.7. GC-MS chromatograms of the *M. spicata* essential oil during storage in glass tubes sealed with cap at 45 °C for 3 months

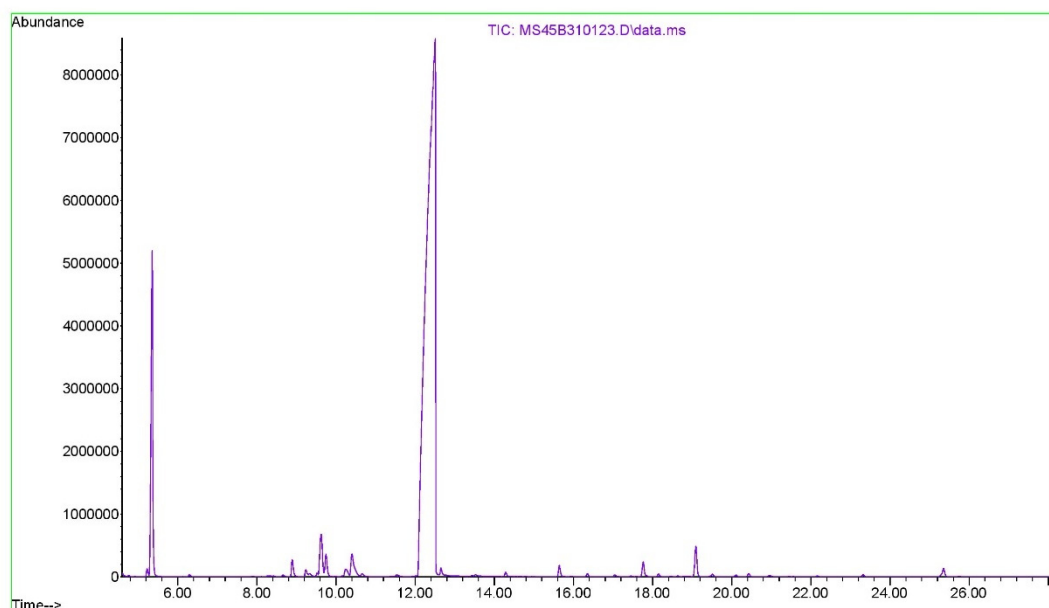


Figure 217 GC-MS chromatogram of *M. spicata* after 10 days of storage

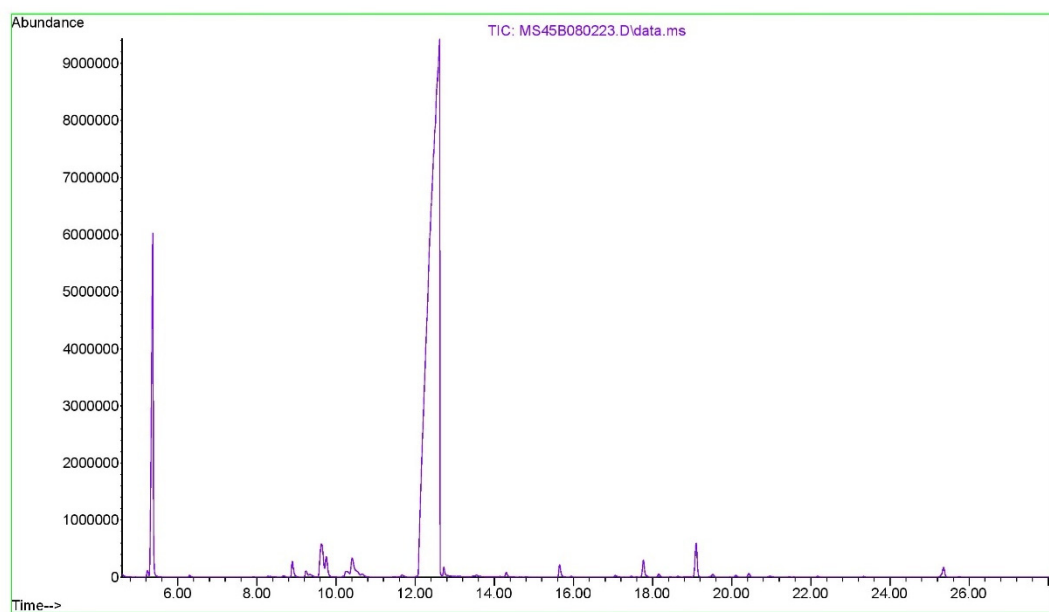


Figure 218 GC-MS chromatogram of *M. spicata* after 20 days of storage

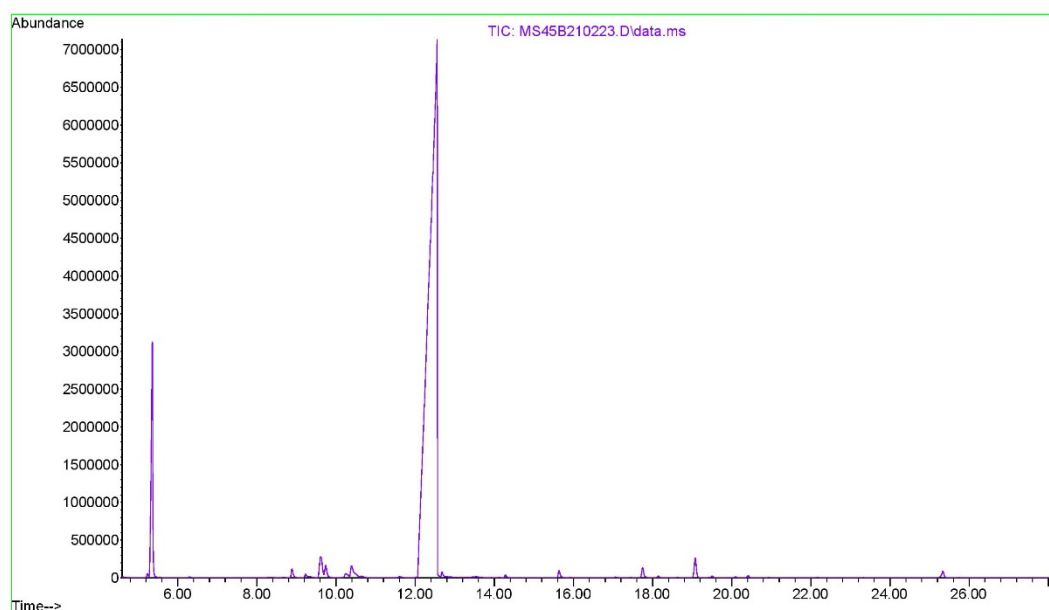


Figure 219 GC-MS chromatogram of *M. spicata* after 30 days of storage

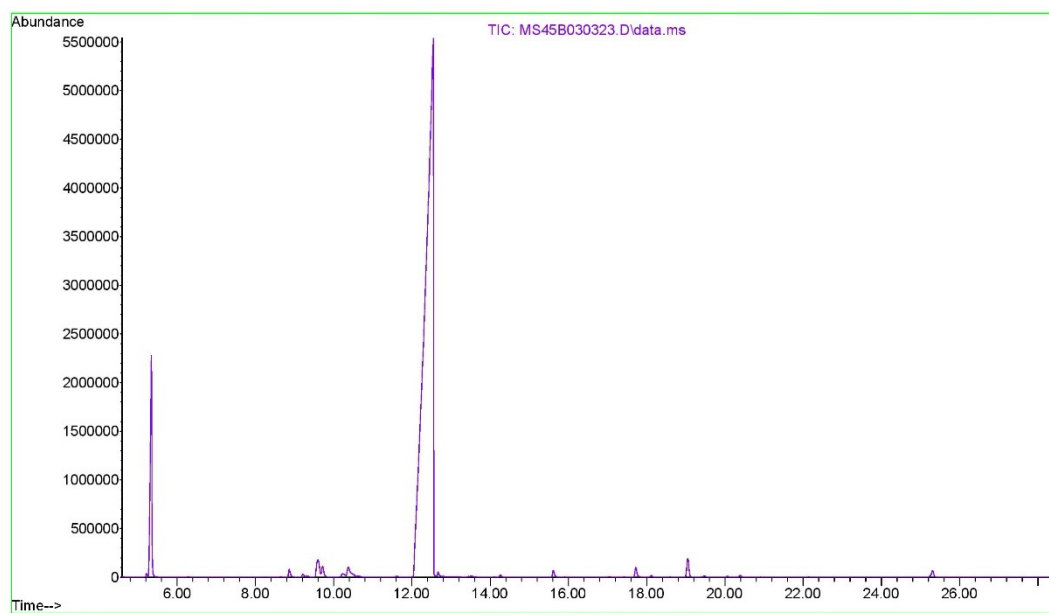


Figure 220 GC-MS chromatogram of *M. spicata* after 40 days of storage

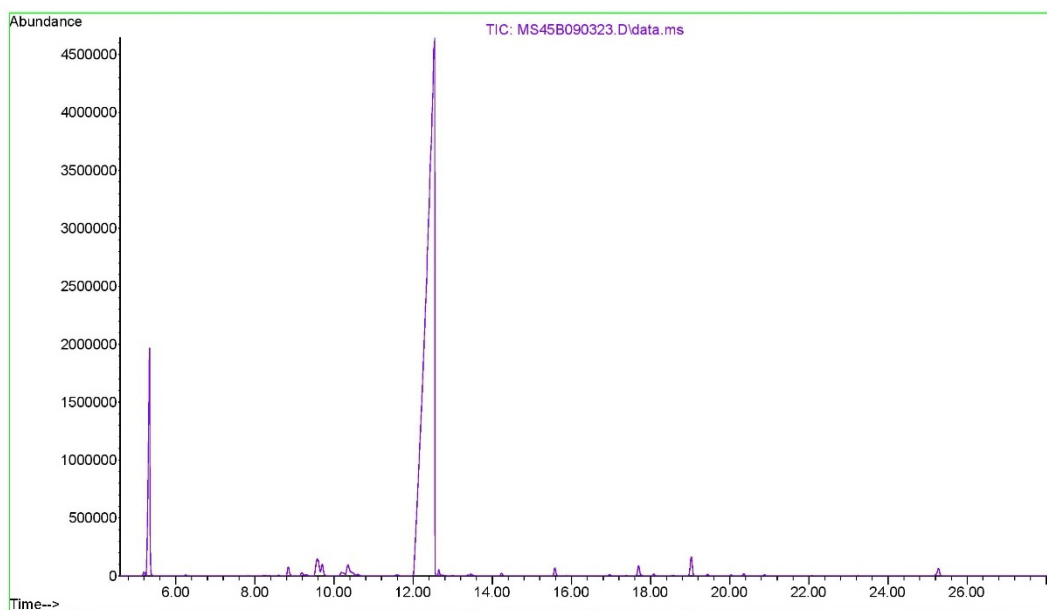


Figure 221 GC-MS chromatogram of *M. spicata* after 50 days of storage

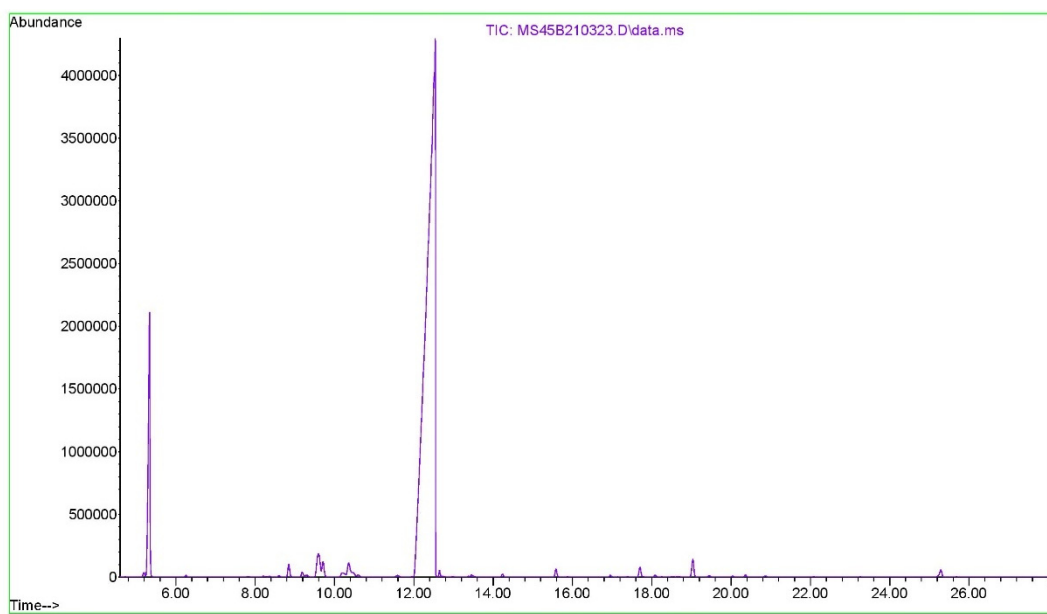


Figure 222 GC-MS chromatogram of *M. spicata* after 60 days of storage

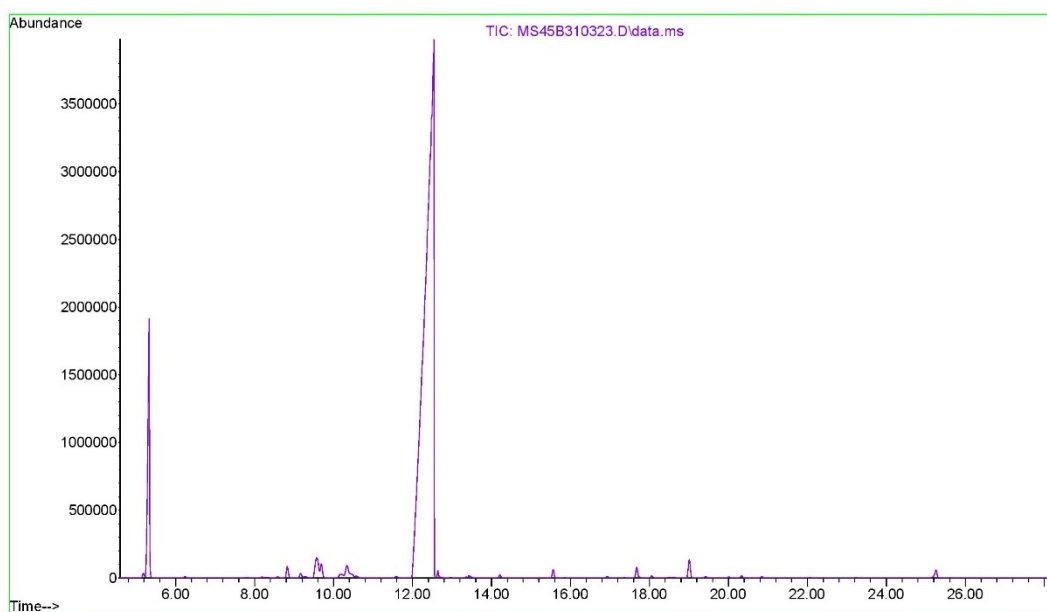


Figure 223 GC-MS chromatogram of *M. spicata* after 70 days of storage

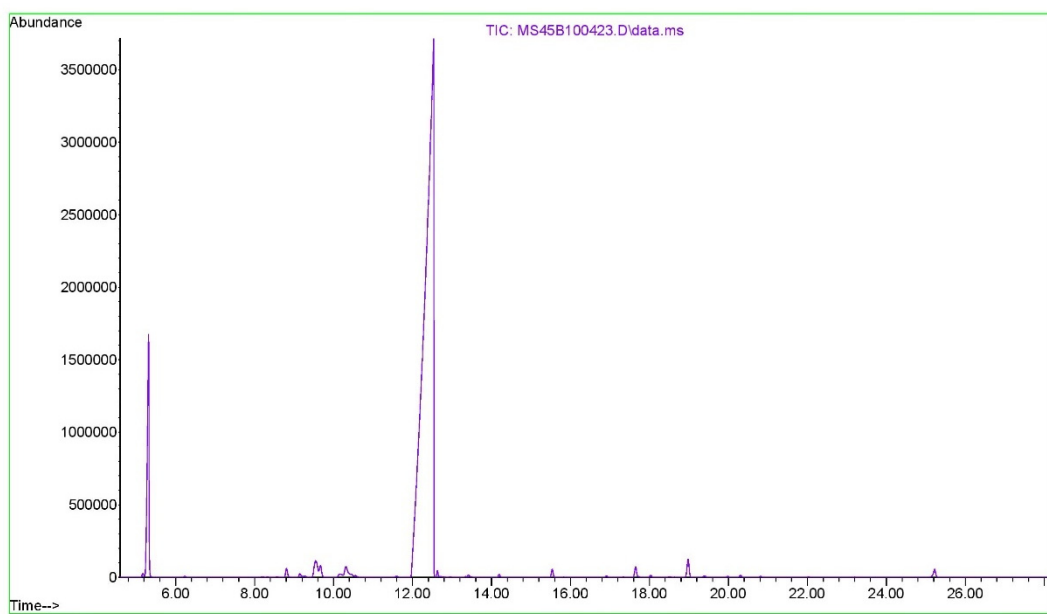


Figure 224 GC-MS chromatogram of *M. spicata* after 80 days of storage

### 5.8. GC-MS chromatograms of the *M. spicata* essential oil during storage in glass tubes sealed with cap at 4 °C for 6 months

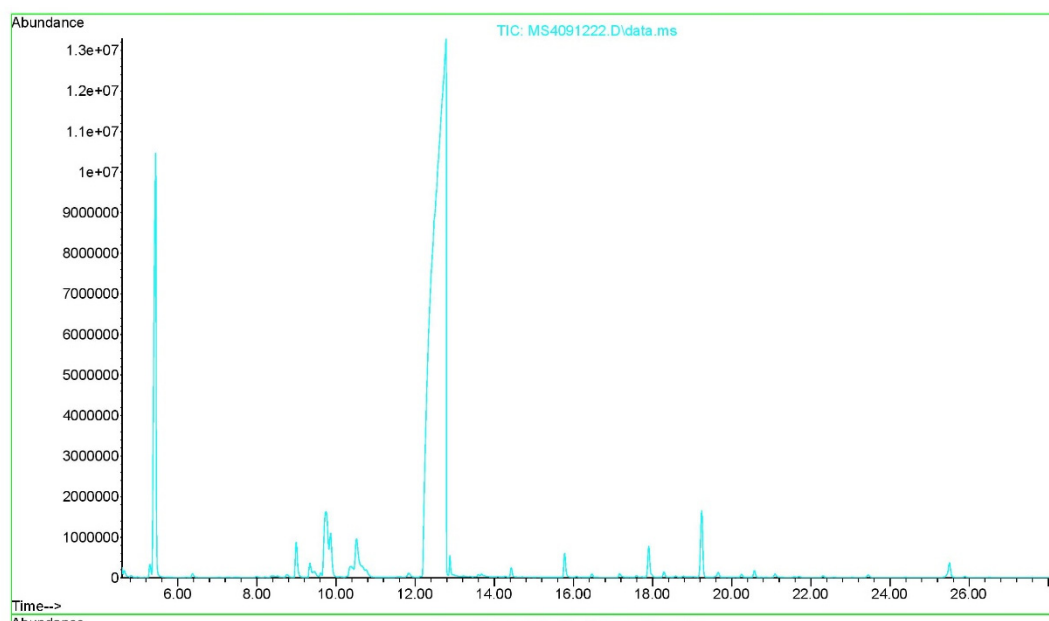


Figure 225 GC-MS chromatogram of *M. spicata* after 30 days of storage

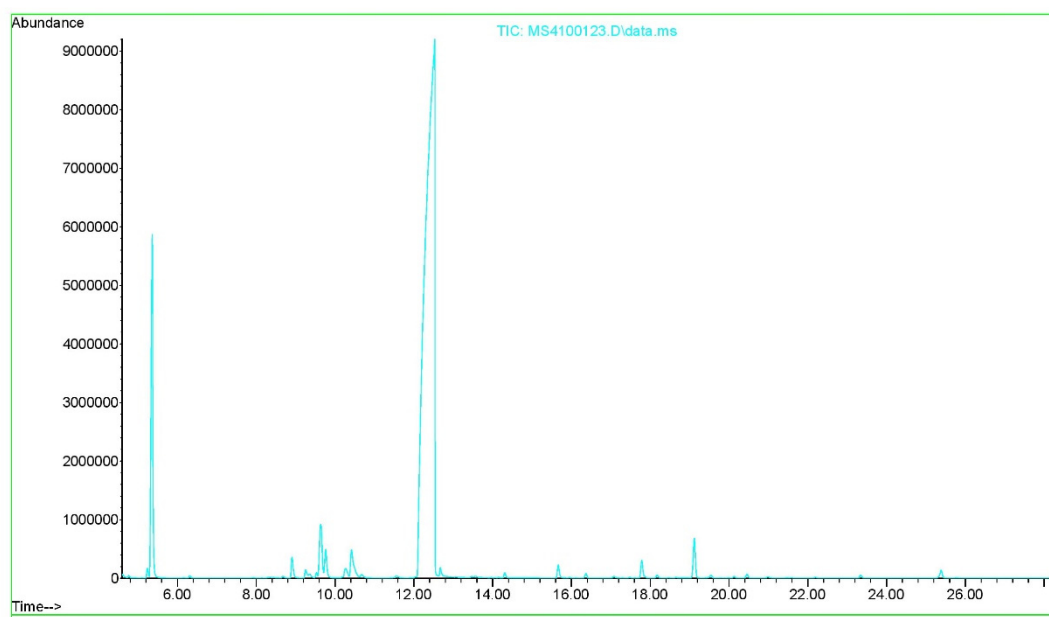


Figure 226 GC-MS chromatogram of *M. spicata* after 60 days of storage

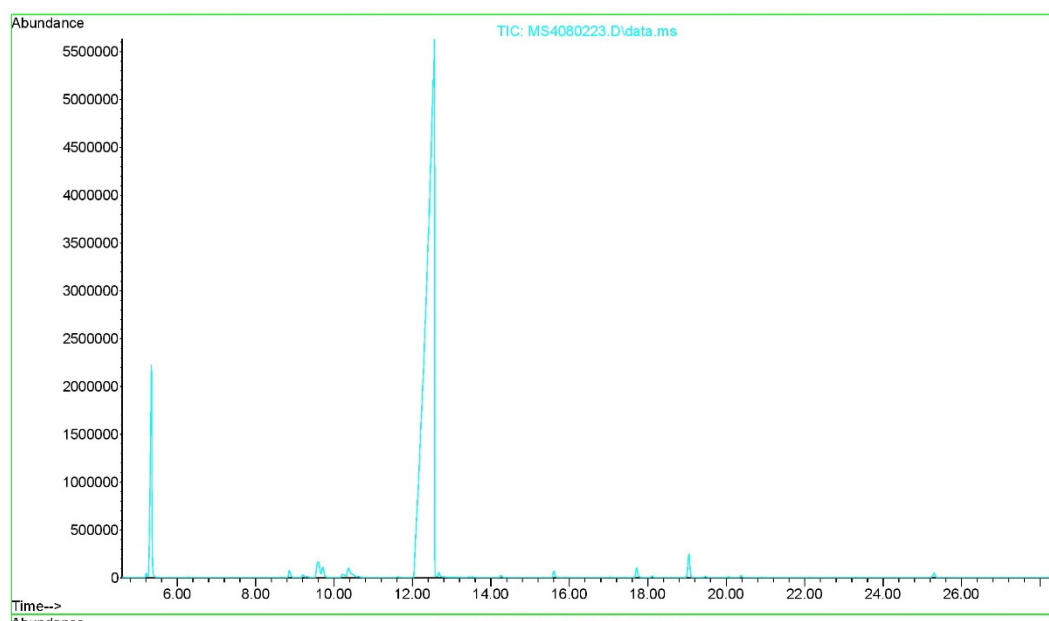


Figure 227 GC-MS chromatogram of *M. spicata* after 90 days of storage

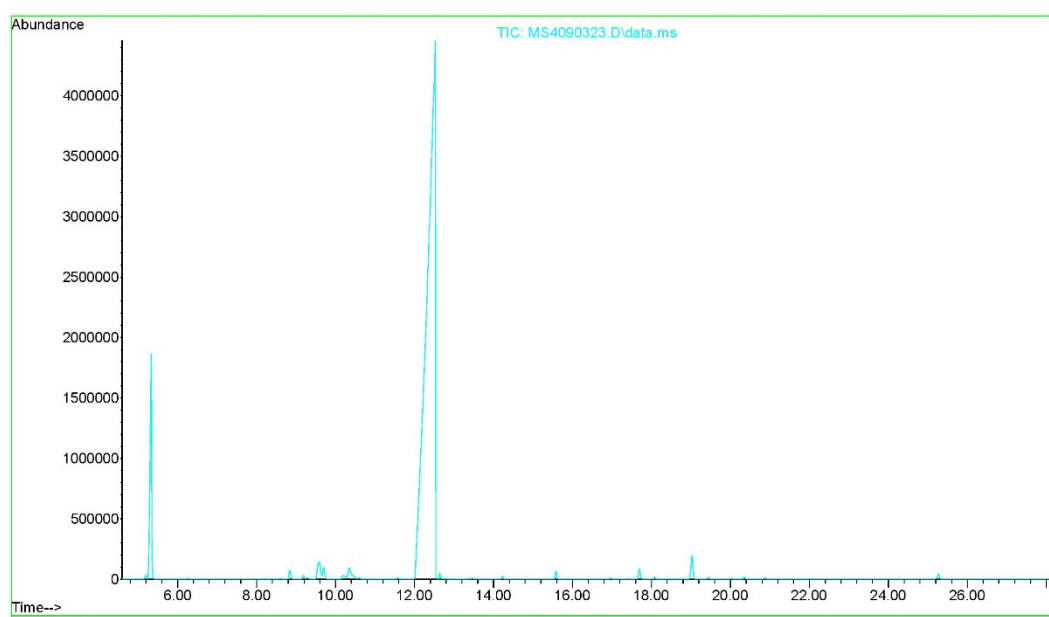


Figure 228 GC-MS chromatogram of *M. spicata* after 120 days of storage

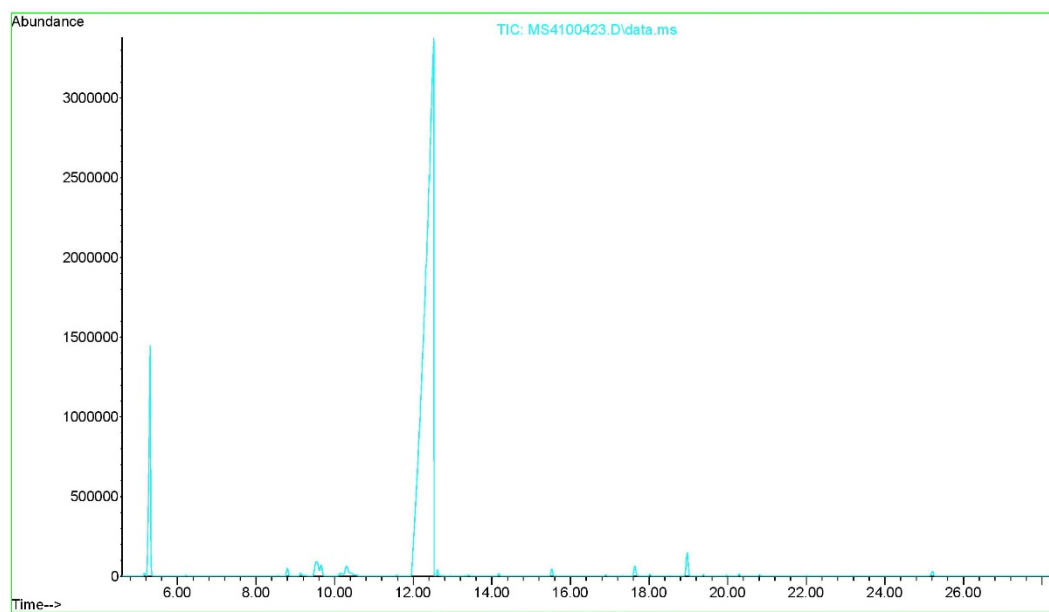


Figure 229 GC-MS chromatogram of *M. spicata* after 150 days of storage

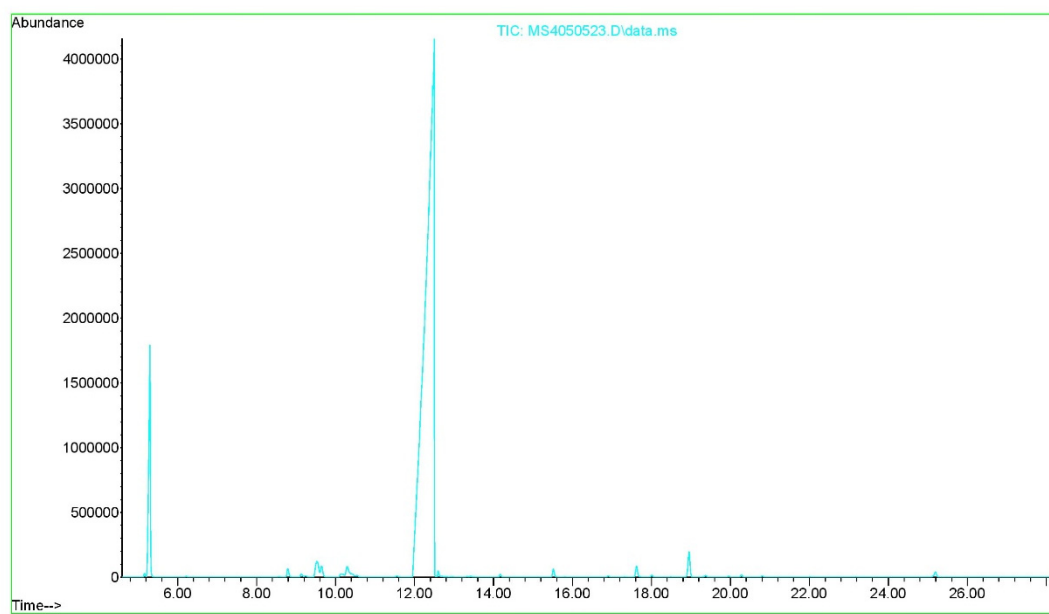


Figure 230 GC-MS chromatogram of *M. spicata* after 180 days of storage

### 5.9. GC-MS chromatogram of the *M. spicata* essential oil during storage in metal container at 4 °C for 6 months

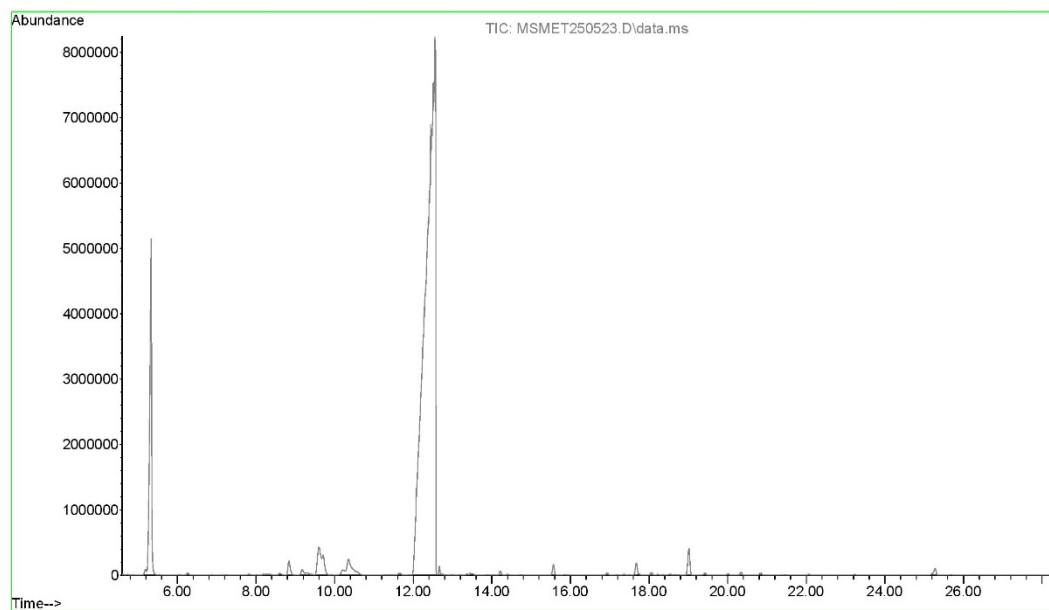


Figure 231 GC-MS chromatogram of *M. spicata* after 180 days of storage

### 5.10. GC-MS chromatogram of the *M. spicata* essential oil during storage in sealed glass ampoules at 4 °C for 6 months

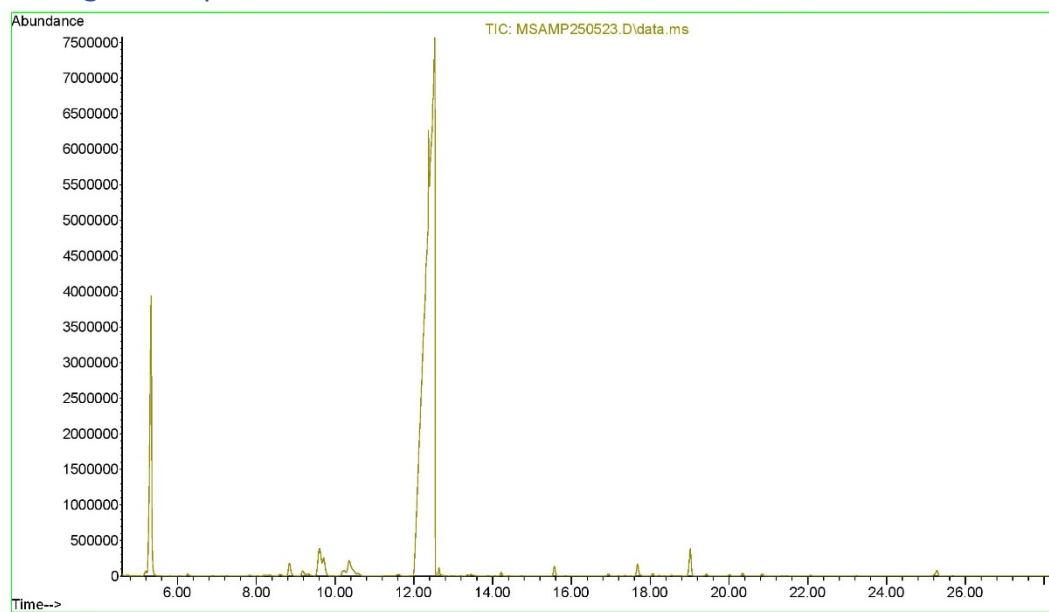


Figure 232 GC-MS chromatogram of *M. spicata* after 180 days of storage

### 5.11. GC-MS chromatogram of the *M. spicata* essential oil during storage in glass tubes sealed with cap at -20 °C for 6 months

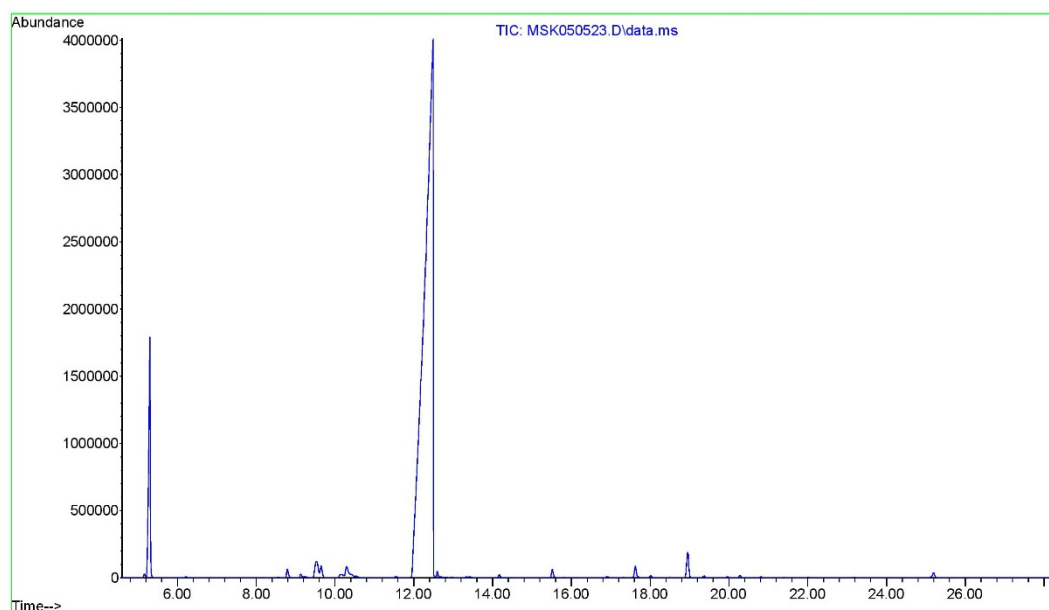


Figure 233 GC-MS chromatogram of *M. spicata* after 180 days of storage

## 6. GC-MS chromatograms of the *Mentha x piperita* L. essential oil

### 6.1. GC-MS chromatogram of the initial *M. x piperita* essential oil

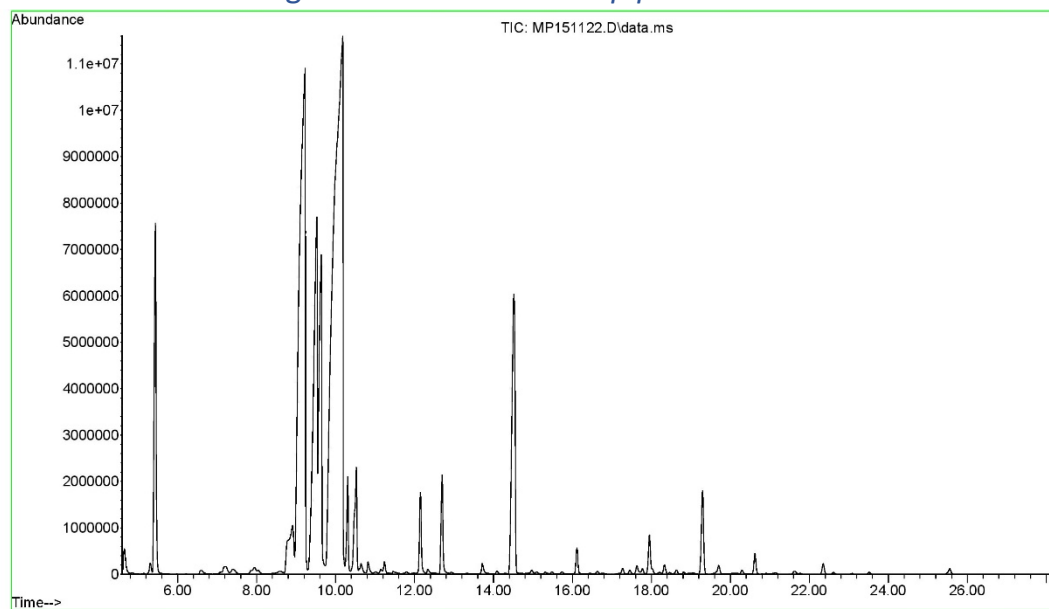


Figure 234 GC-MS chromatogram of *M. x piperita* before storage

6.2. GC-MS chromatograms of the *M. x piperita* essential oil during storage in glass tubes sealed with cap at room temperature (23 °C) under darkness for 6 months

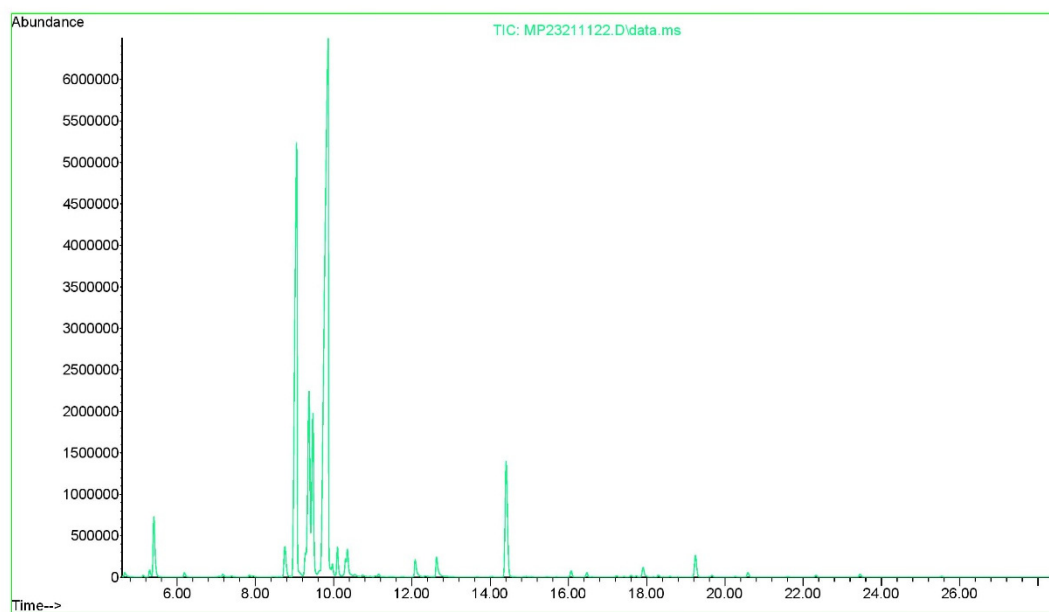


Figure 235 GC-MS chromatogram of *M. x piperita* after 10 days of storage

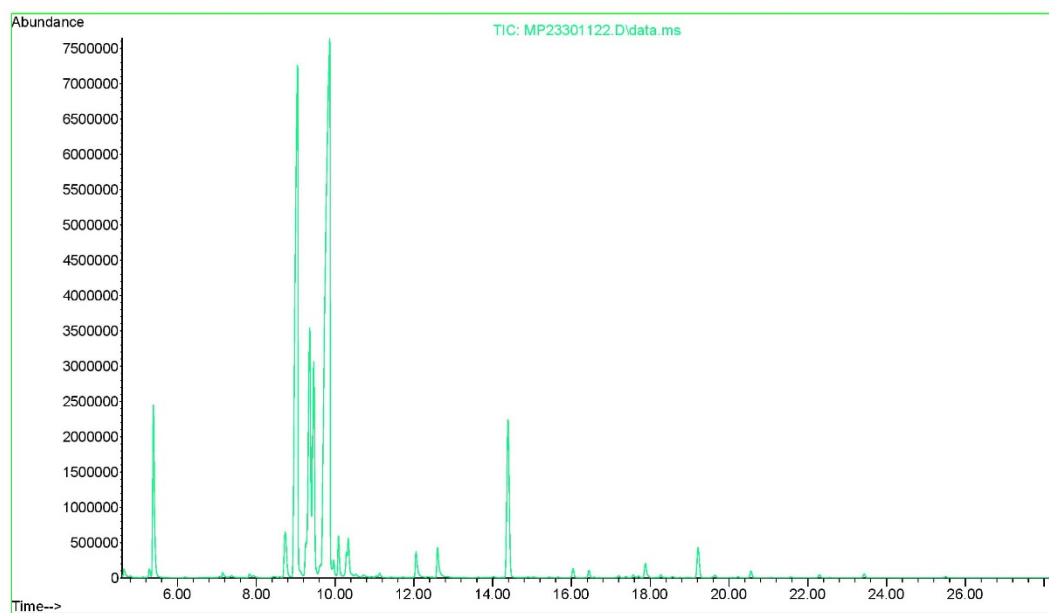


Figure 236 GC-MS chromatogram of *M. x piperita* after 20 days of storage

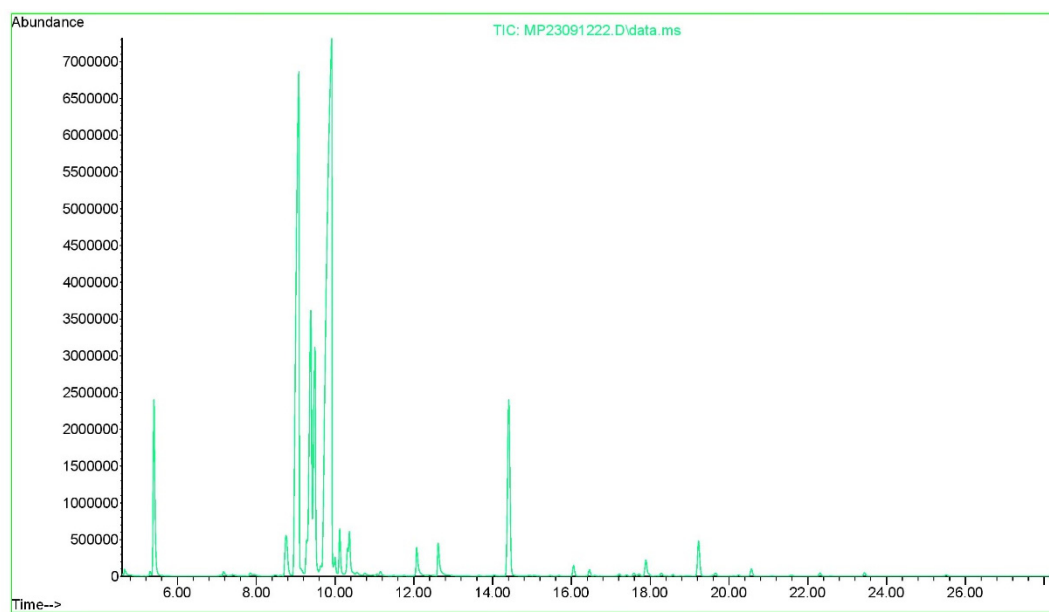


Figure 237 GC-MS chromatogram of *M. x piperita* after 30 days of storage

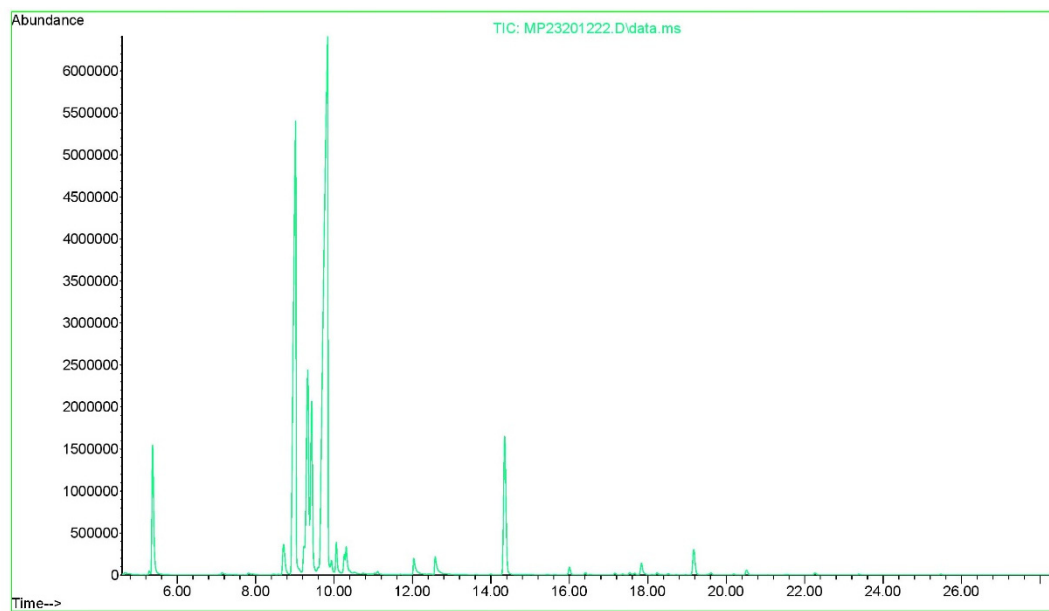


Figure 238 GC-MS chromatogram of *M. x piperita* after 40 days of storage

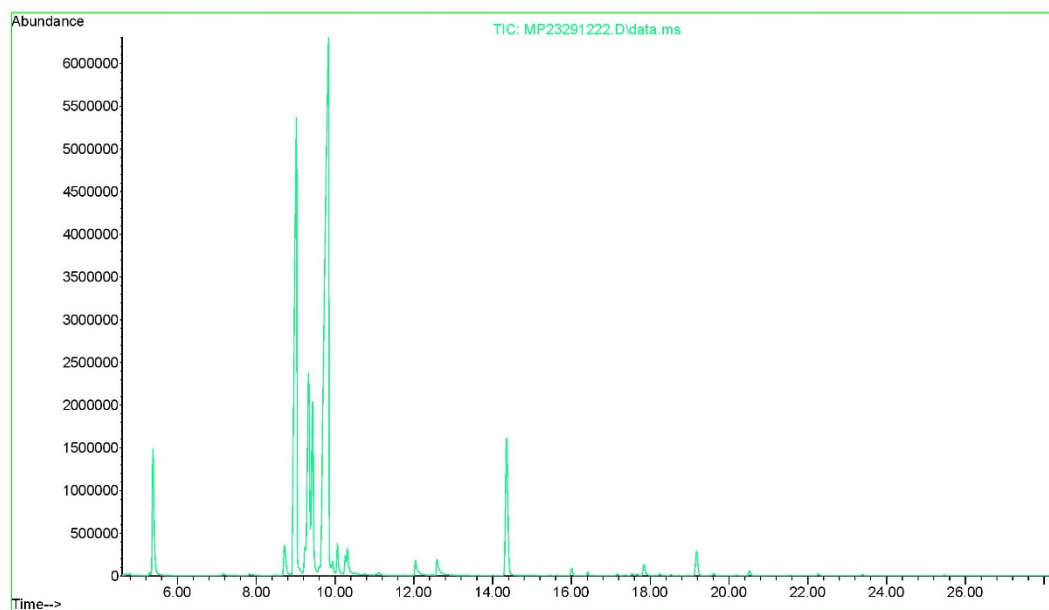


Figure 239 GC-MS chromatogram of *M. x piperita* after 50 days of storage

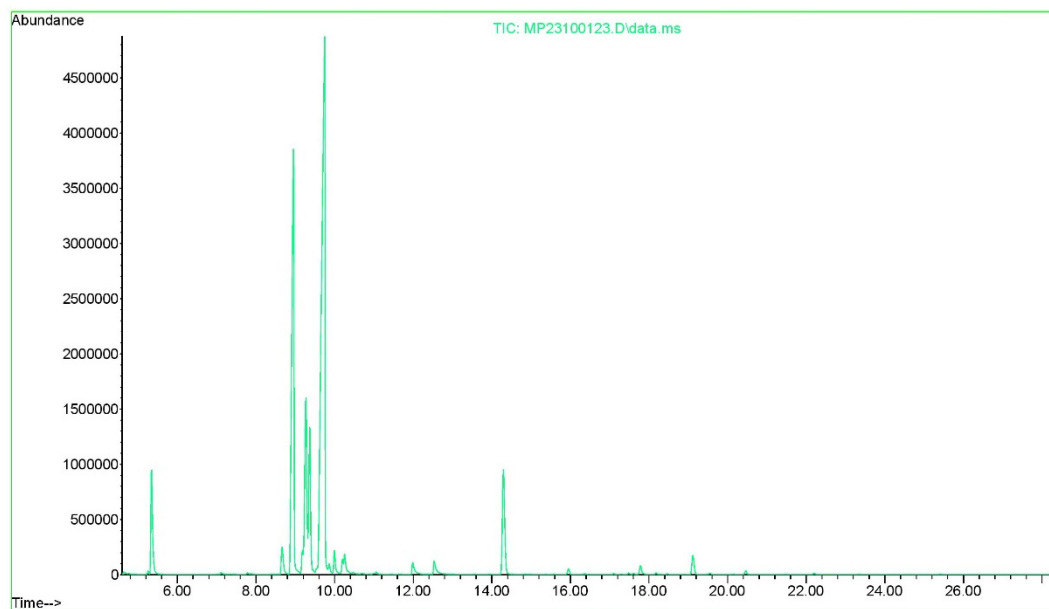


Figure 240 GC-MS chromatogram of *M. x piperita* after 60 days of storage

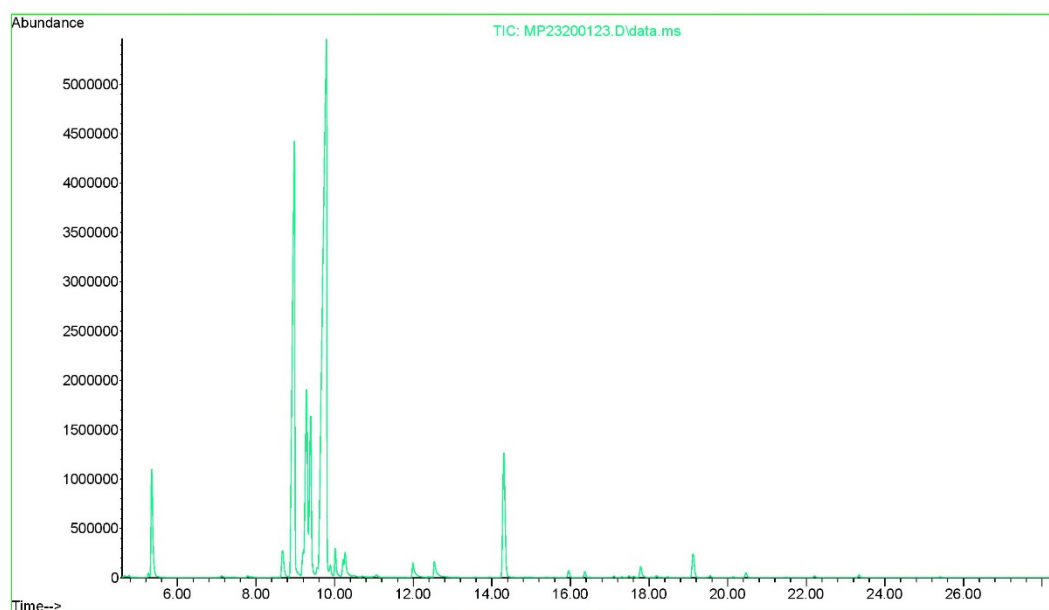


Figure 241 GC-MS chromatogram of *M. x piperita* after 70 days of storage

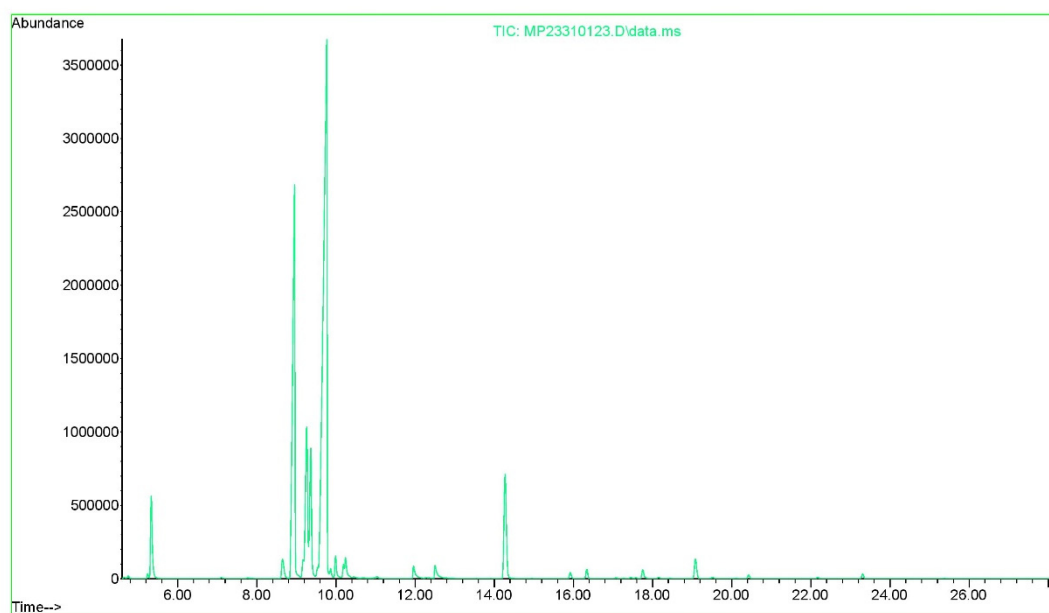


Figure 242 GC-MS chromatogram of *M. x piperita* after 80 days of storage

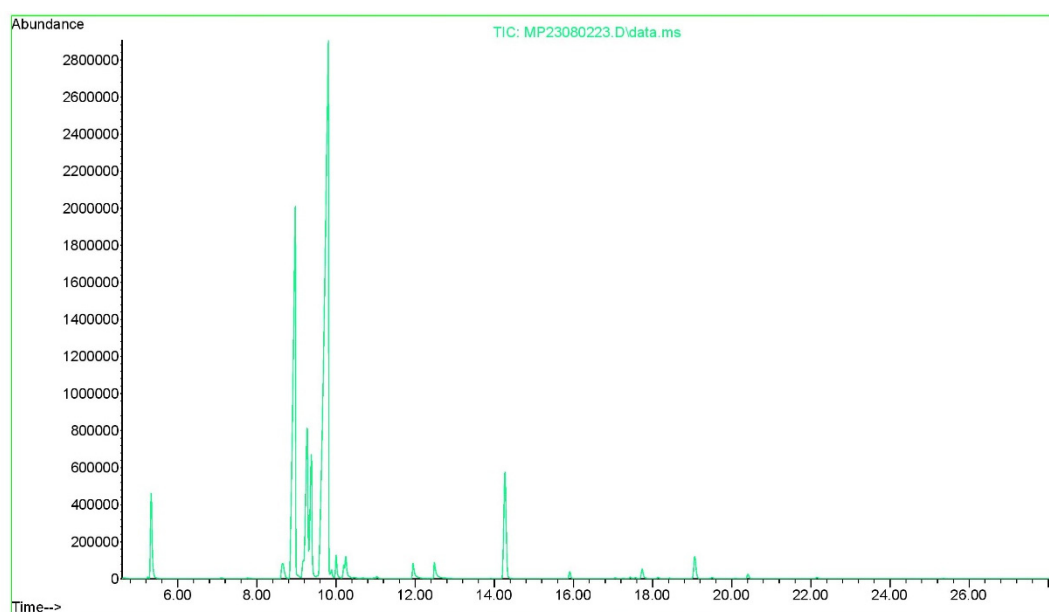


Figure 243 GC-MS chromatogram of *M. x piperita* after 90 days of storage

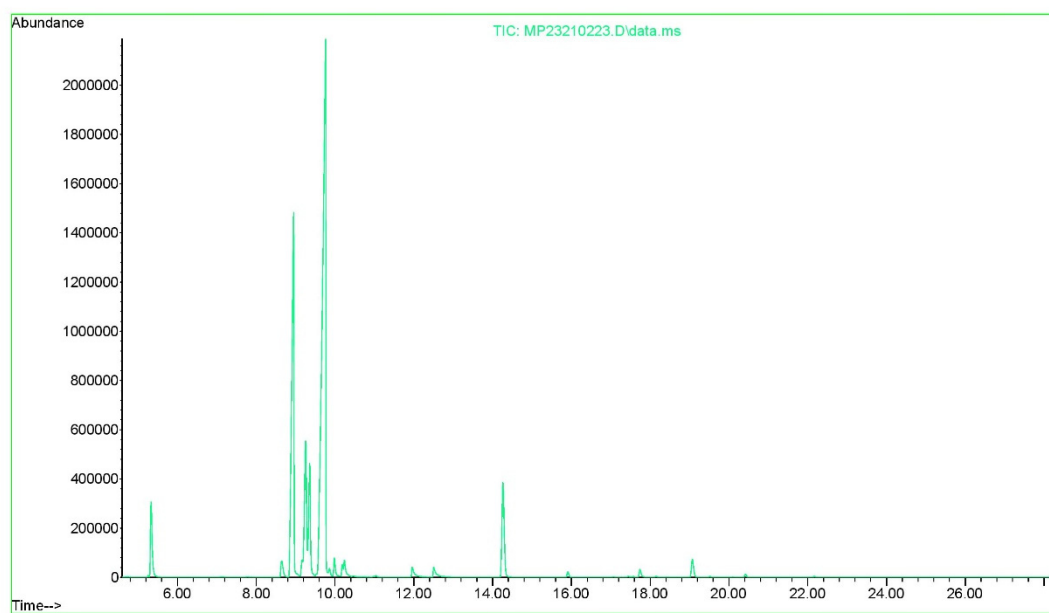


Figure 244 GC-MS chromatogram of *M. x piperita* after 100 days of storage

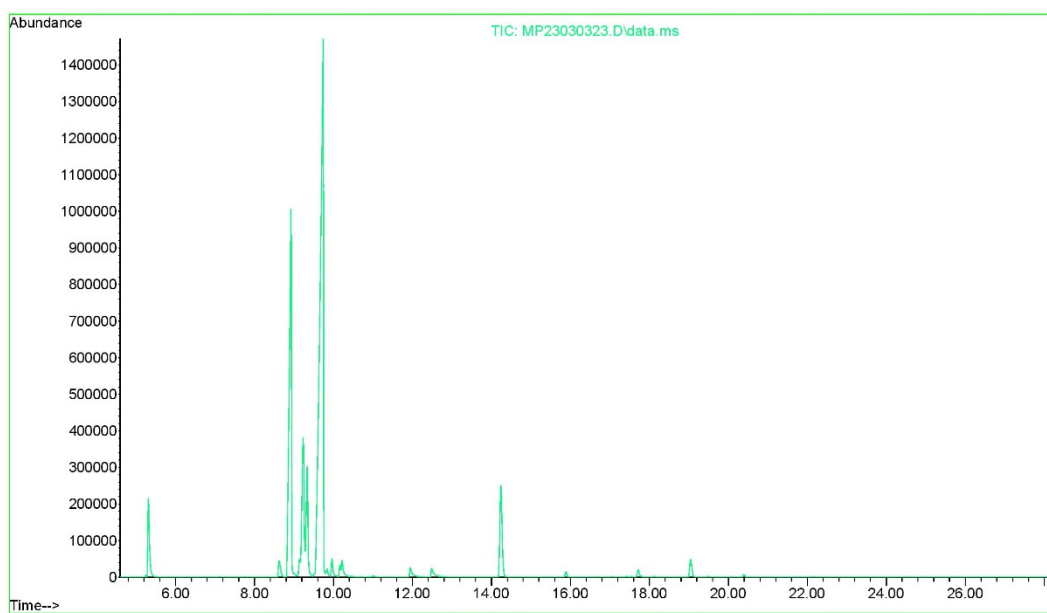


Figure 245 GC-MS chromatogram of *M. x piperita* after 110 days of storage

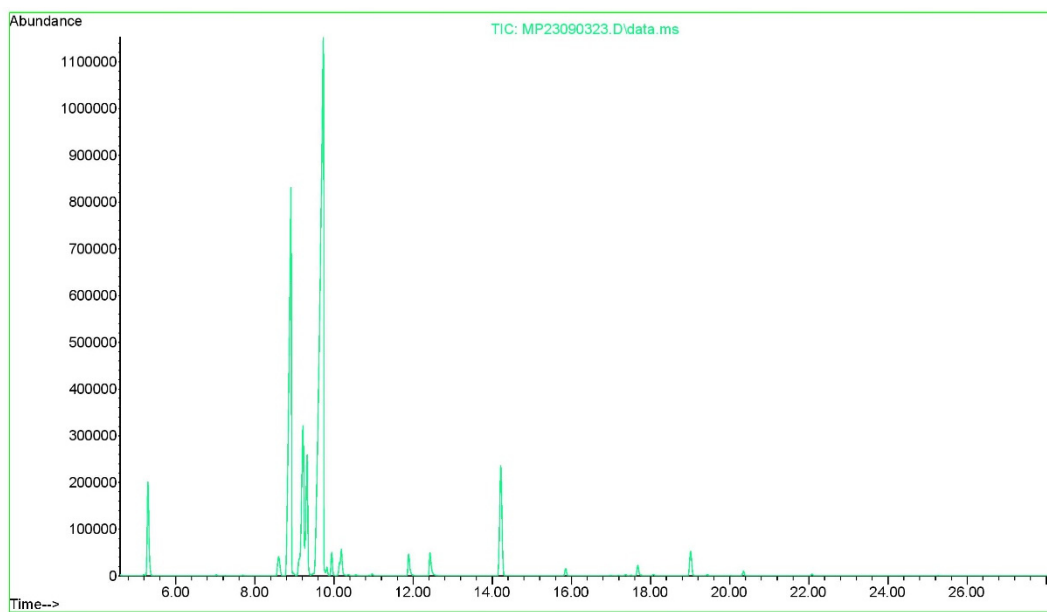


Figure 246 GC-MS chromatogram of *M. x piperita* after 120 days of storage

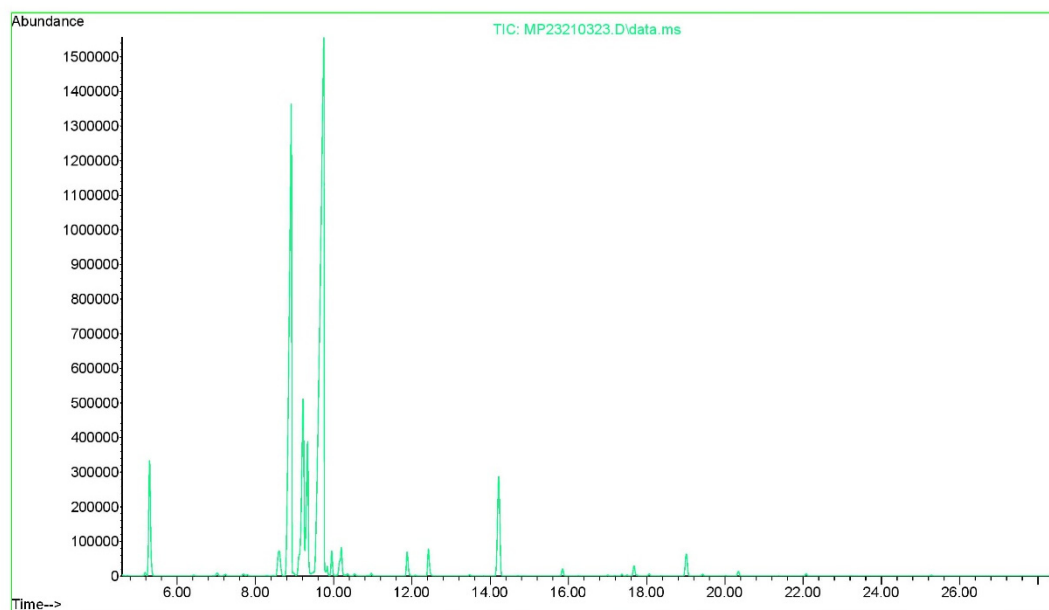


Figure 247 GC-MS chromatogram of *M. x piperita* after 130 days of storage

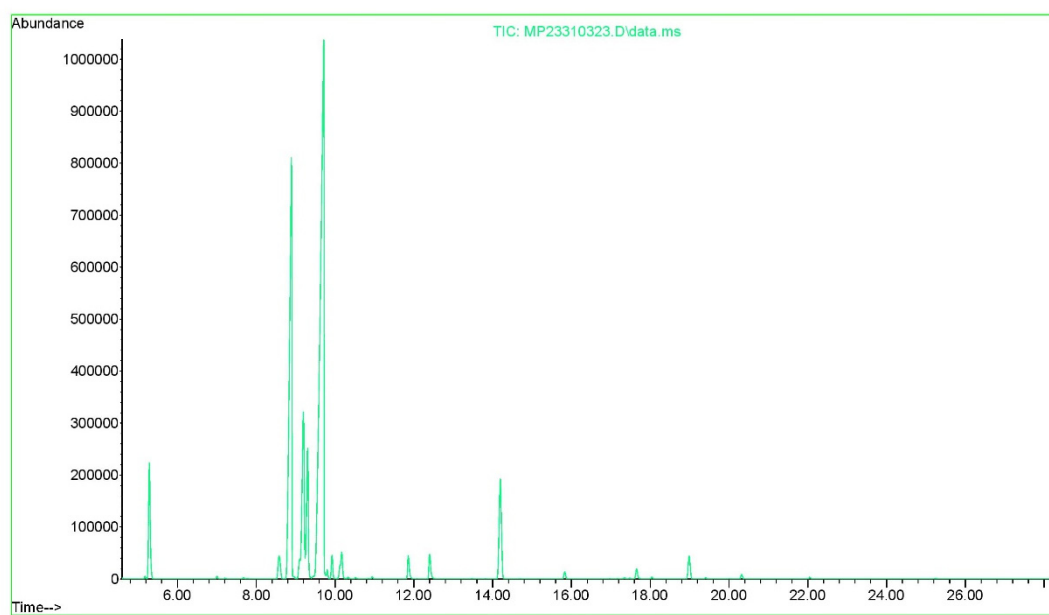


Figure 248 GC-MS chromatogram of *M. x piperita* after 140 days of storage

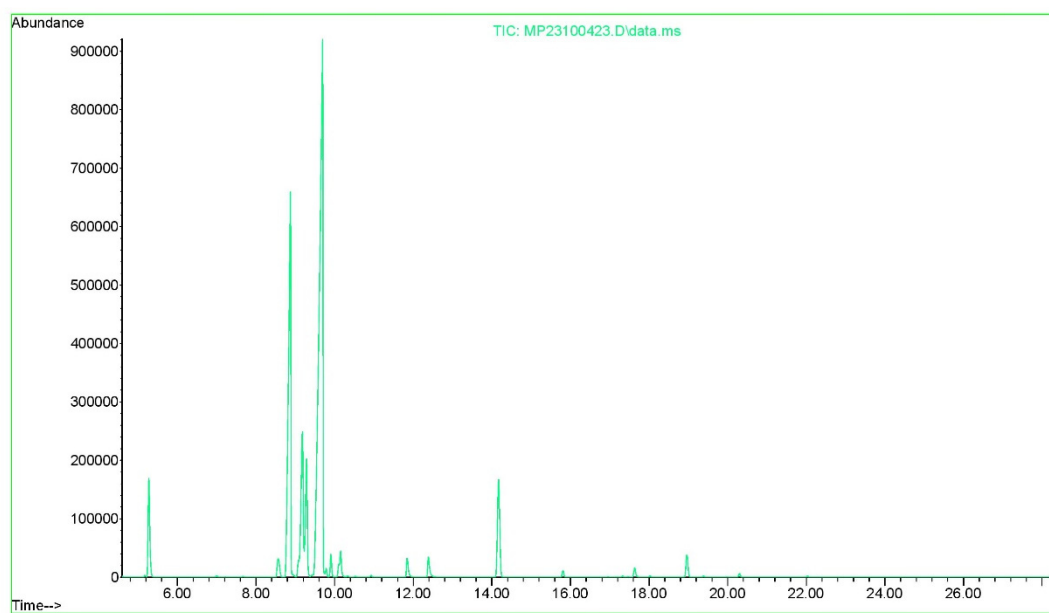


Figure 249 GC-MS chromatogram of *M. x piperita* after 150 days of storage

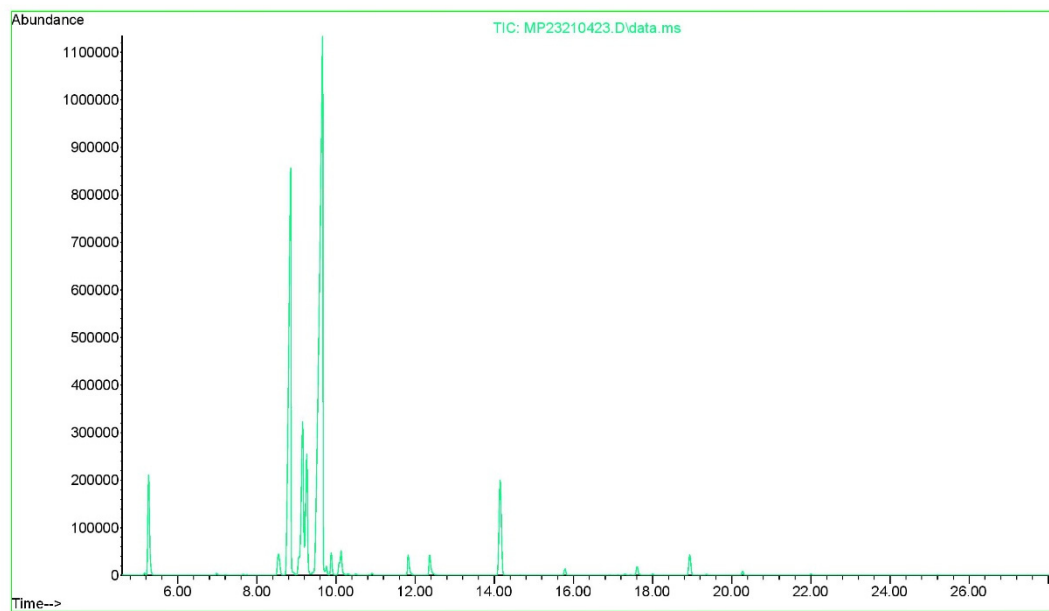


Figure 250 GC-MS chromatogram of *M. x piperita* after 160 days of storage

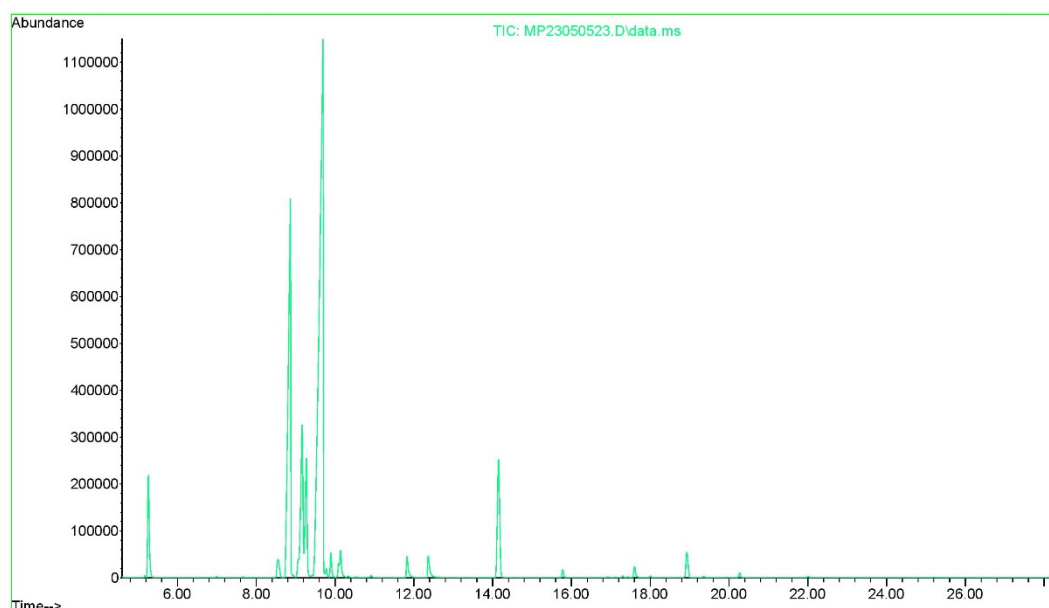


Figure 251 GC-MS chromatogram of *M. x piperita* after 170 days of storage

### 6.3. GC-MS chromatograms of the *M. x piperita* essential oil during storage in glass tubes sealed with cap under direct sunlight exposure for 6 months

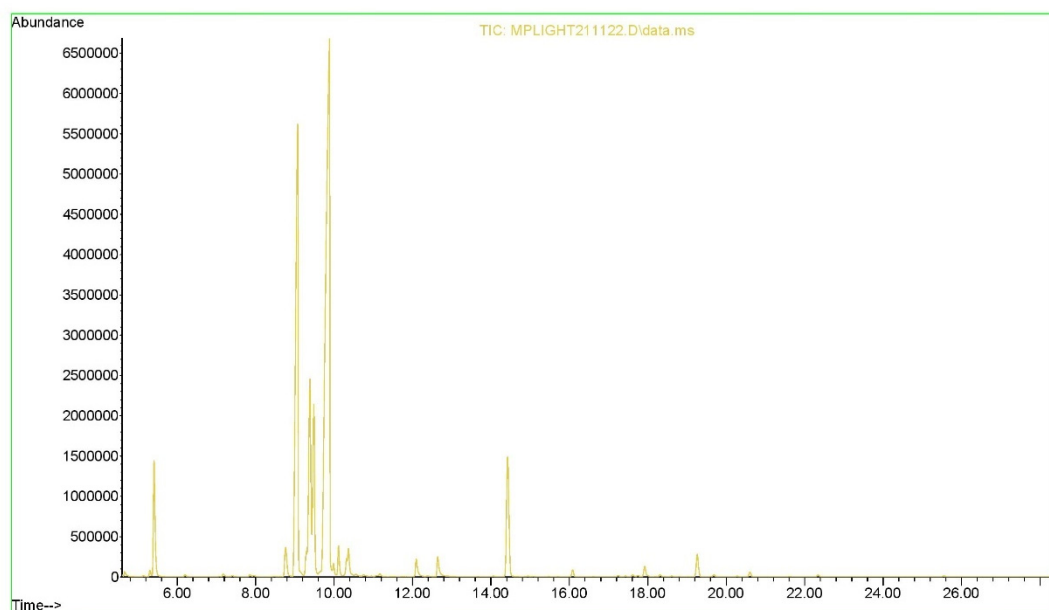


Figure 252 GC-MS chromatogram of *M. x piperita* after 10 days of storage

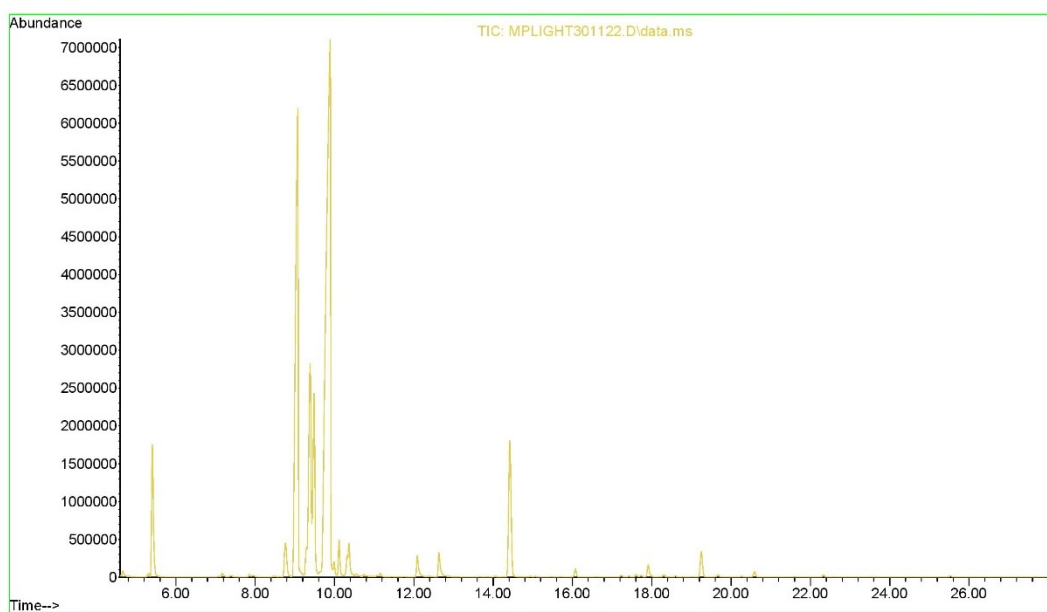


Figure 253 GC-MS chromatogram of *M. x piperita* after 20 days of storage

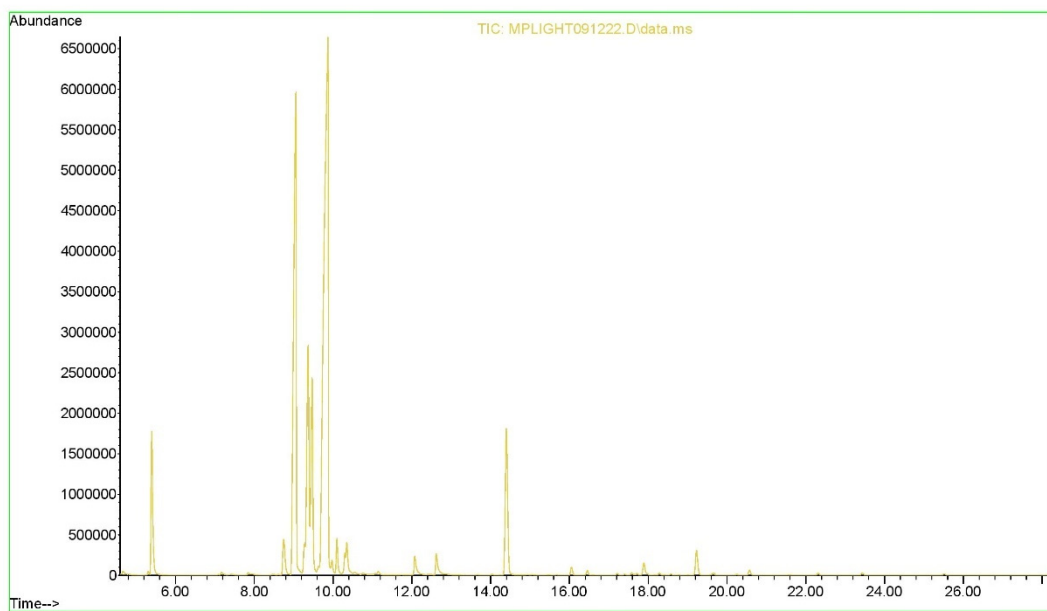


Figure 254 GC-MS chromatogram of *M. x piperita* after 30 days of storage

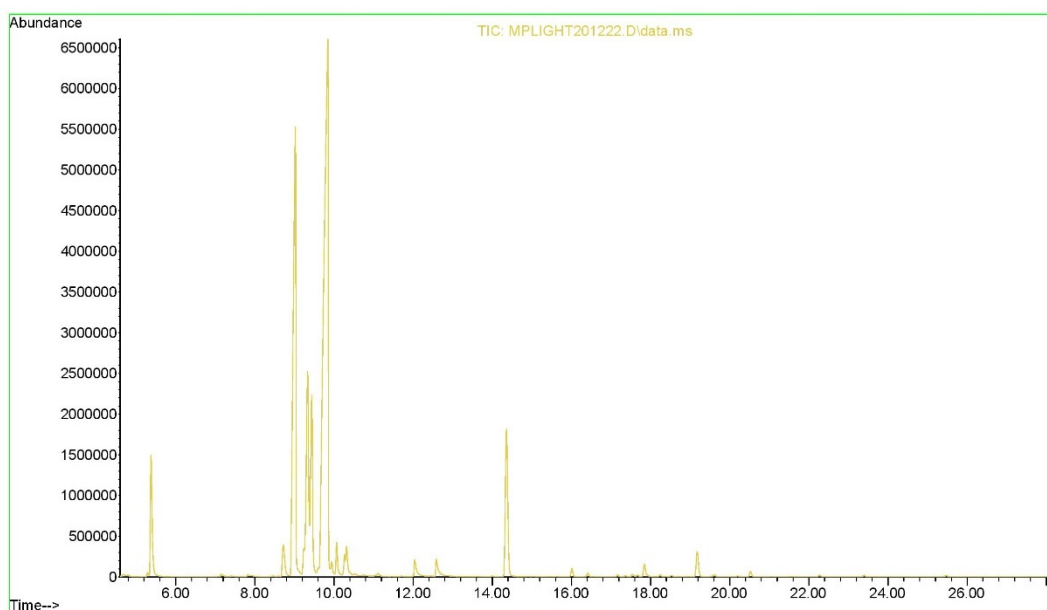


Figure 255 GC-MS chromatogram of *M. x piperita* after 40 days of storage

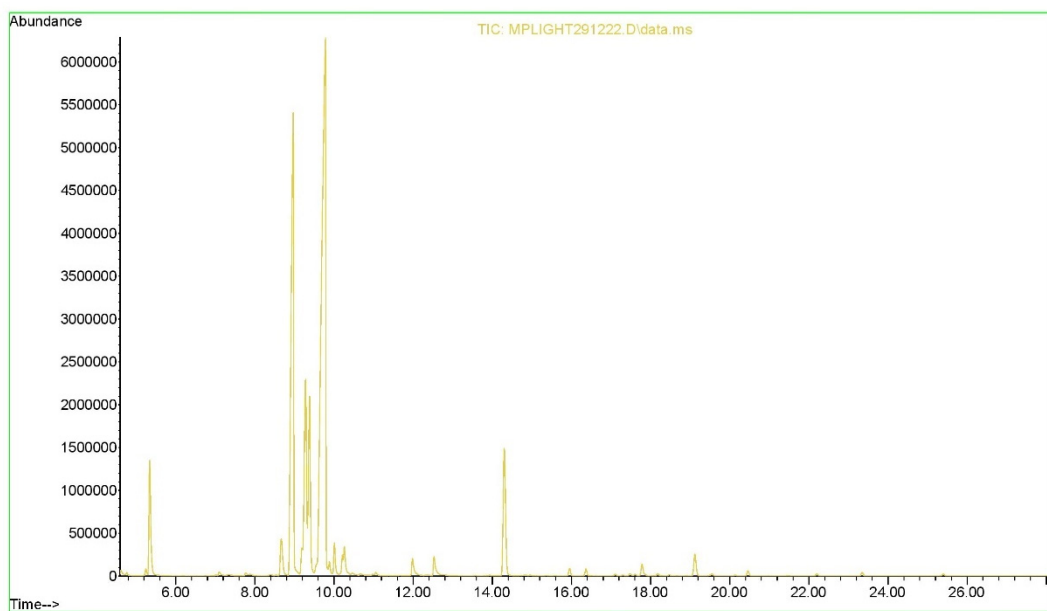


Figure 256 GC-MS chromatogram of *M. x piperita* after 50 days of storage

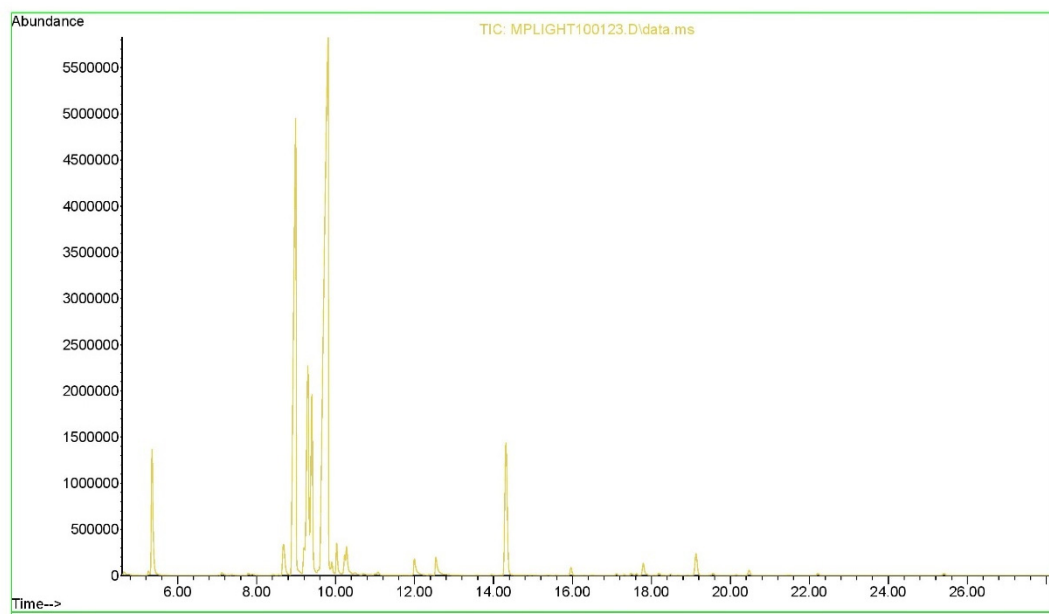


Figure 257 GC-MS chromatogram of *M. x piperita* after 60 days of storage

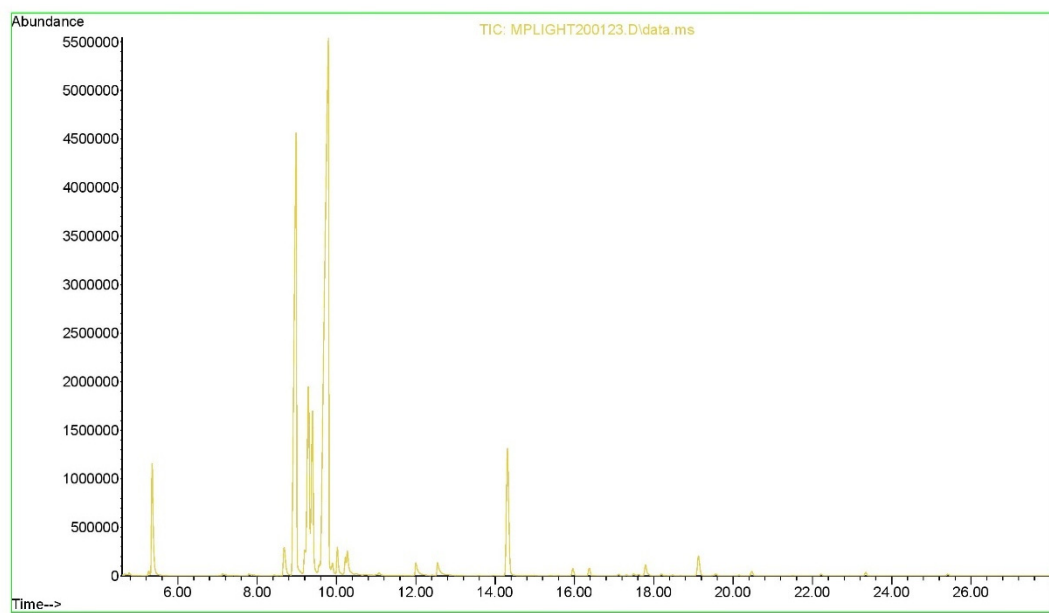


Figure 258 GC-MS chromatogram of *M. x piperita* after 70 days of storage

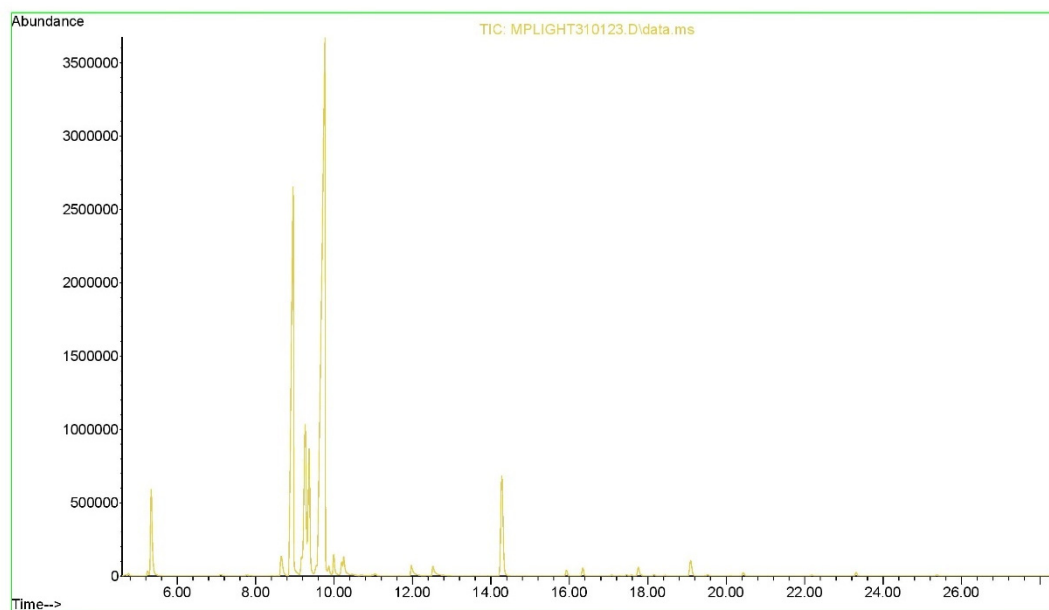


Figure 259 GC-MS chromatogram of *M. x piperita* after 80 days of storage

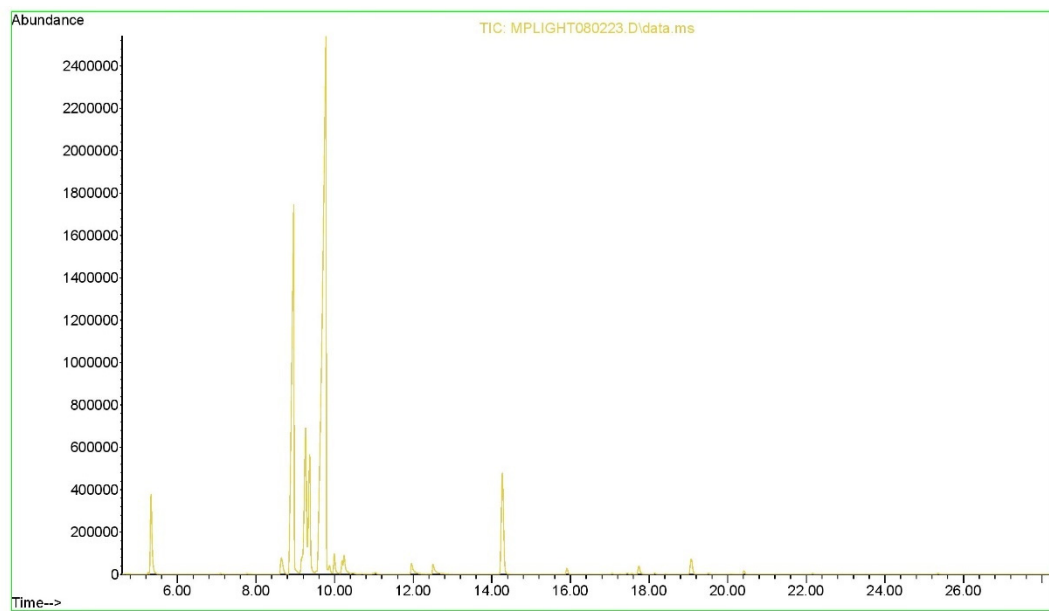


Figure 260 GC-MS chromatogram of *M. x piperita* after 90 days of storage

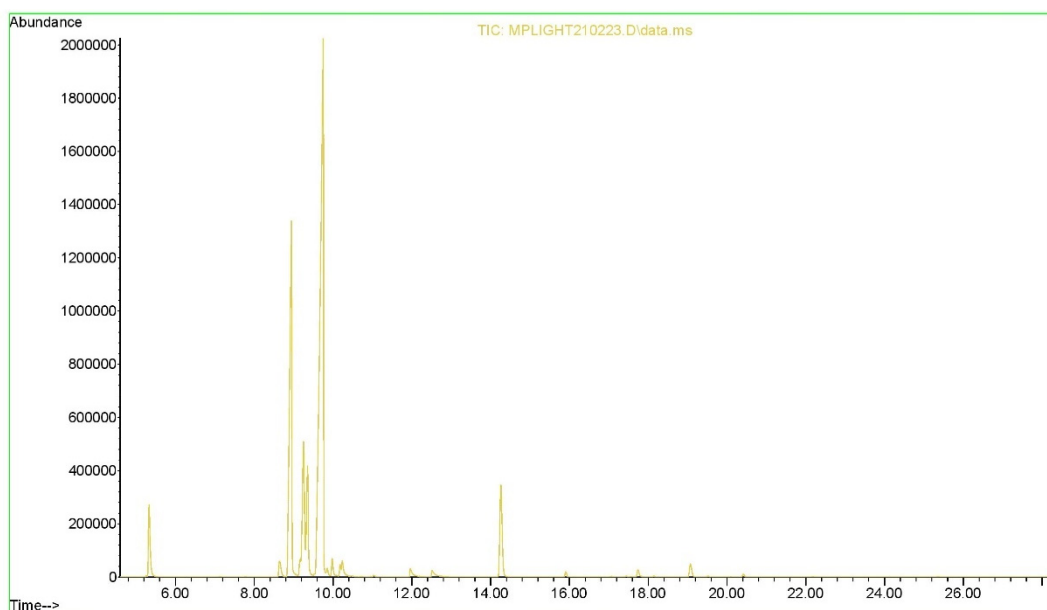


Figure 261 GC-MS chromatogram of *M. x piperita* after 100 days of storage

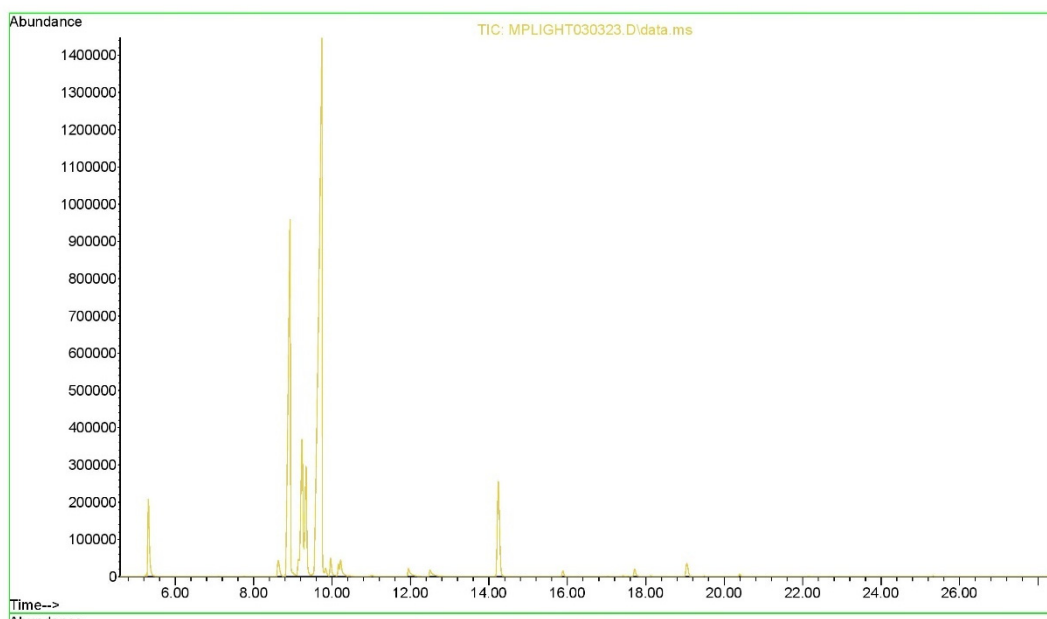


Figure 262 GC-MS chromatogram of *M. x piperita* after 110 days of storage

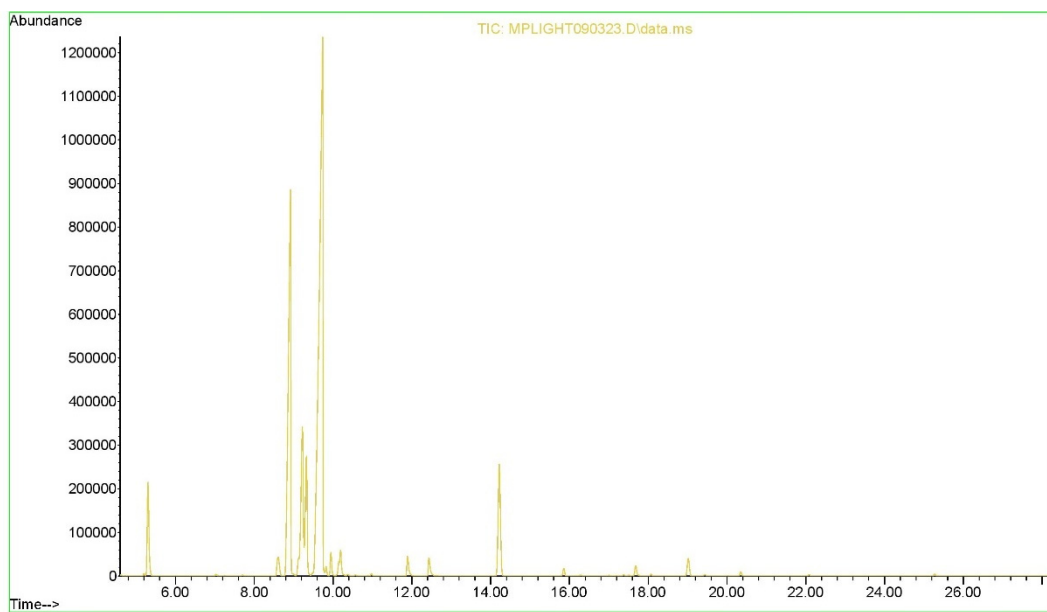


Figure 263 GC-MS chromatogram of *M. x piperita* after 120 days of storage

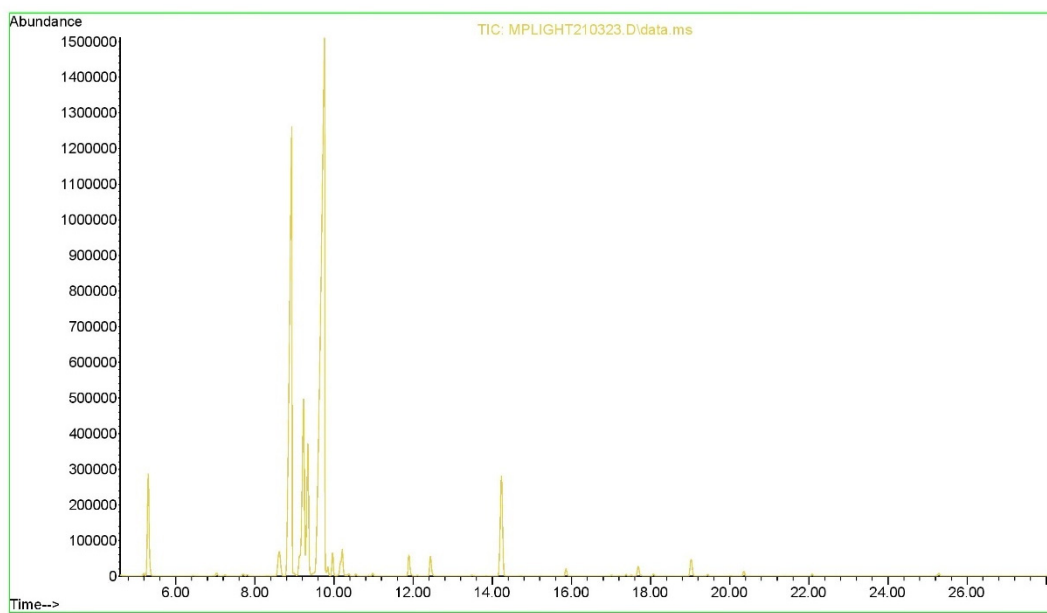


Figure 264 GC-MS chromatogram of *M. x piperita* after 130 days of storage

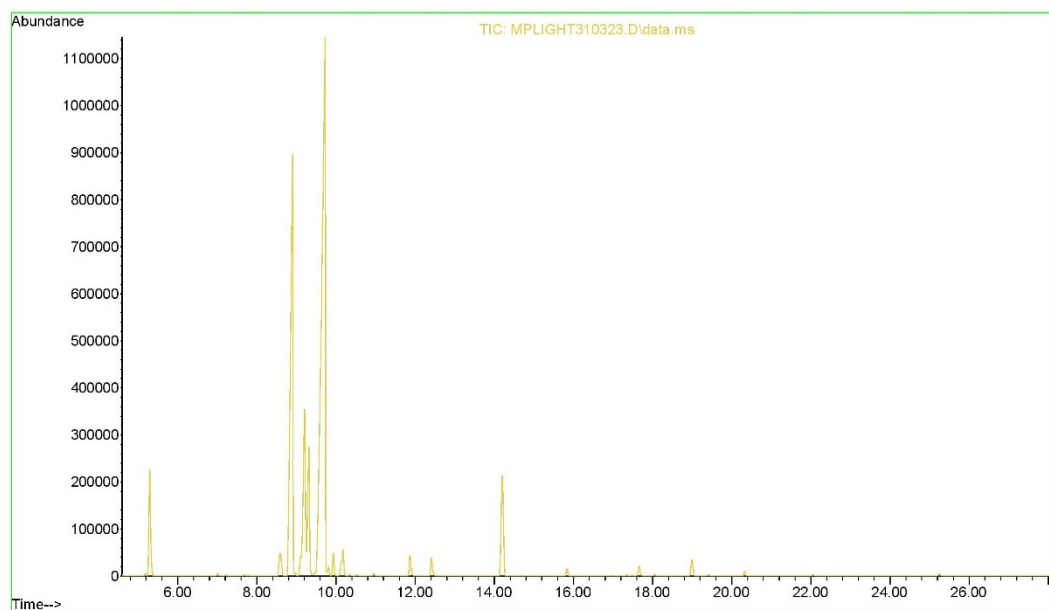


Figure 265 GC-MS chromatogram of *M. x piperita* after 140 days of storage

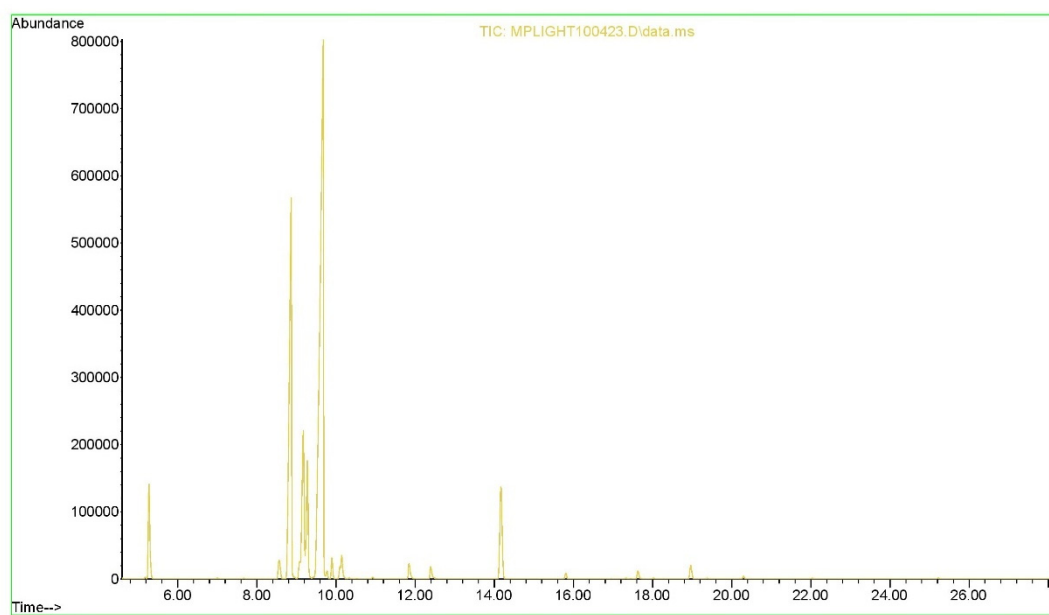


Figure 266 GC-MS chromatogram of *M. x piperita* after 150 days of storage

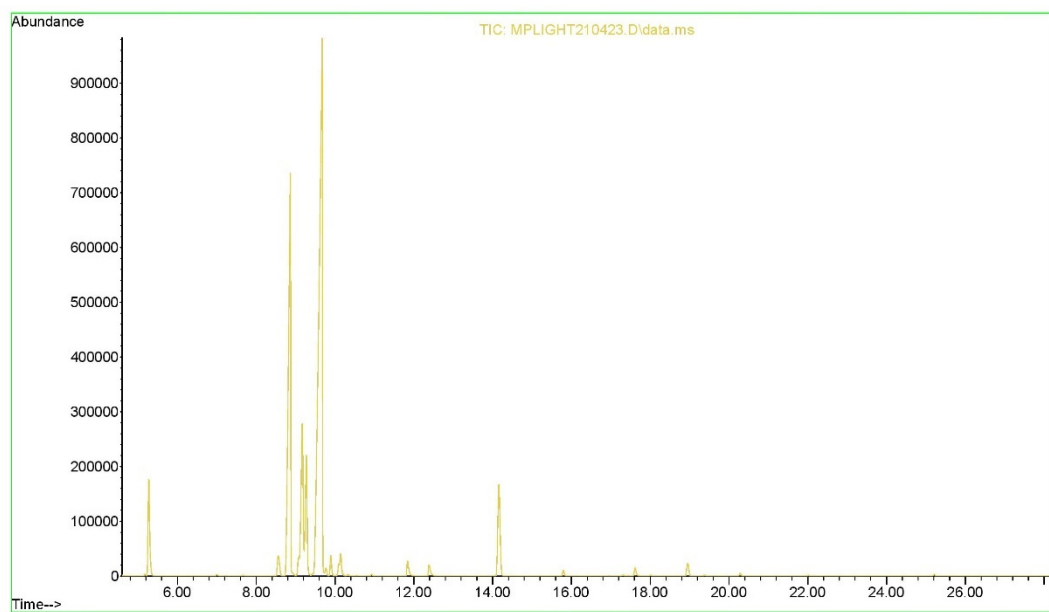


Figure 267 GC-MS chromatogram of *M. x piperita* after 160 days of storage

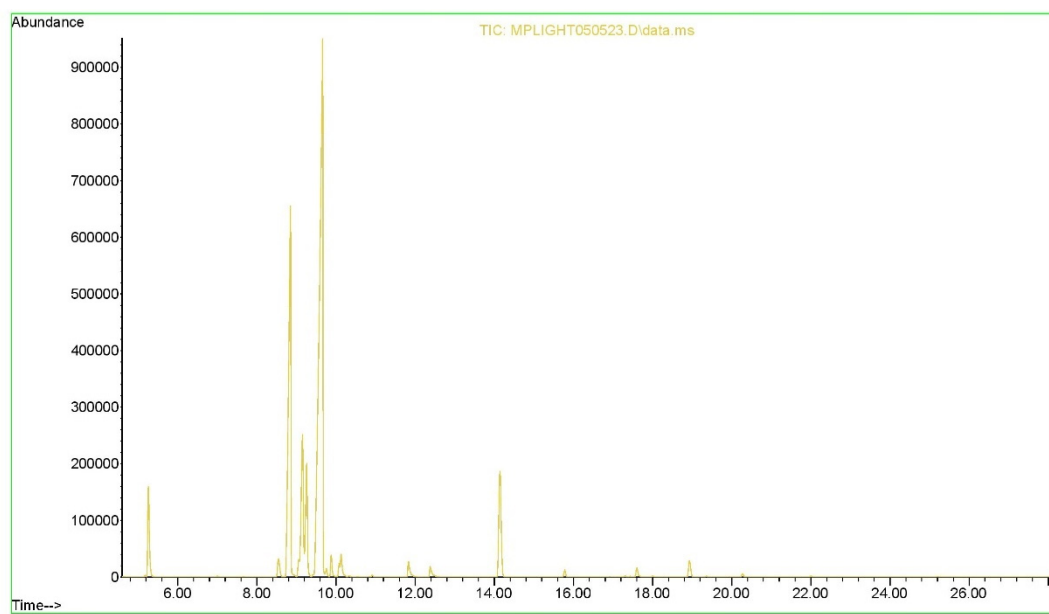


Figure 268 GC-MS chromatogram of *M. x piperita* after 170 days of storage

#### 6.4. GC-MS chromatograms of the *M. x piperita* essential oil during storage in sealed glass ampoules at 35 °C for 3 months

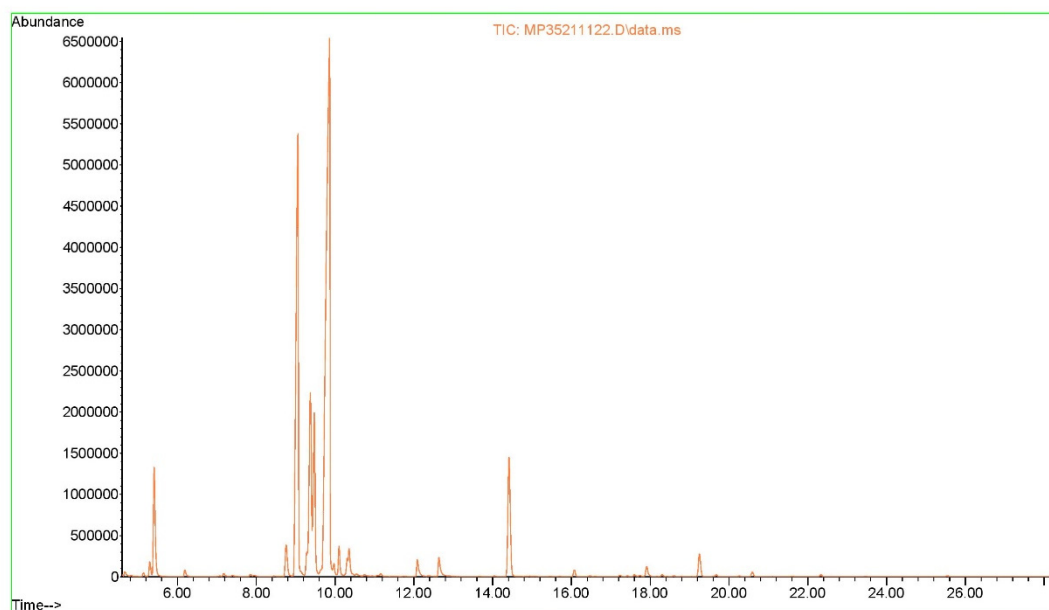


Figure 269 GC-MS chromatogram of *M. x piperita* after 10 days of storage

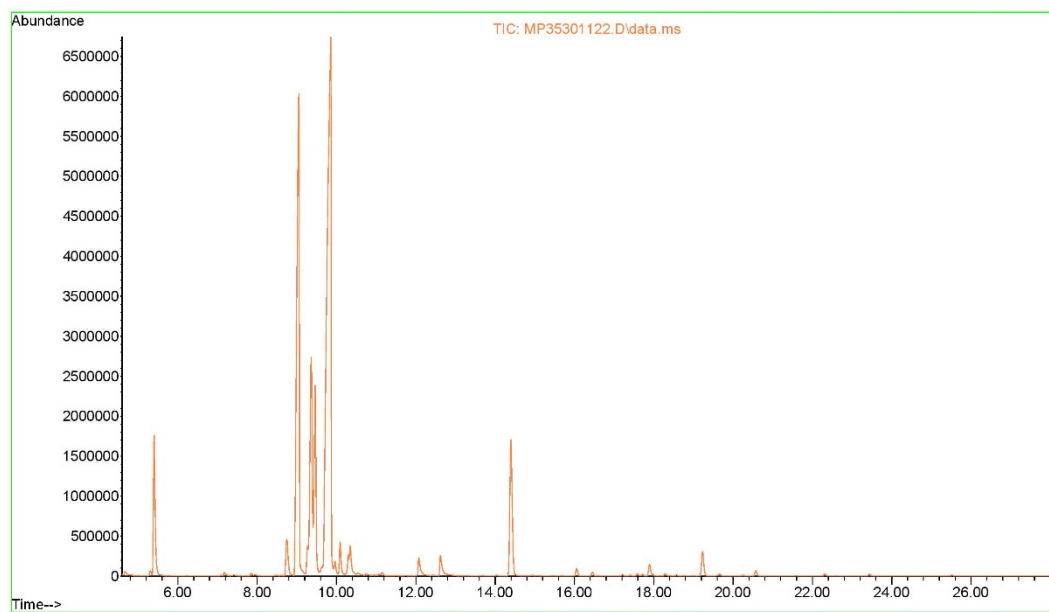


Figure 270 GC-MS chromatogram of *M. x piperita* after 20 days of storage

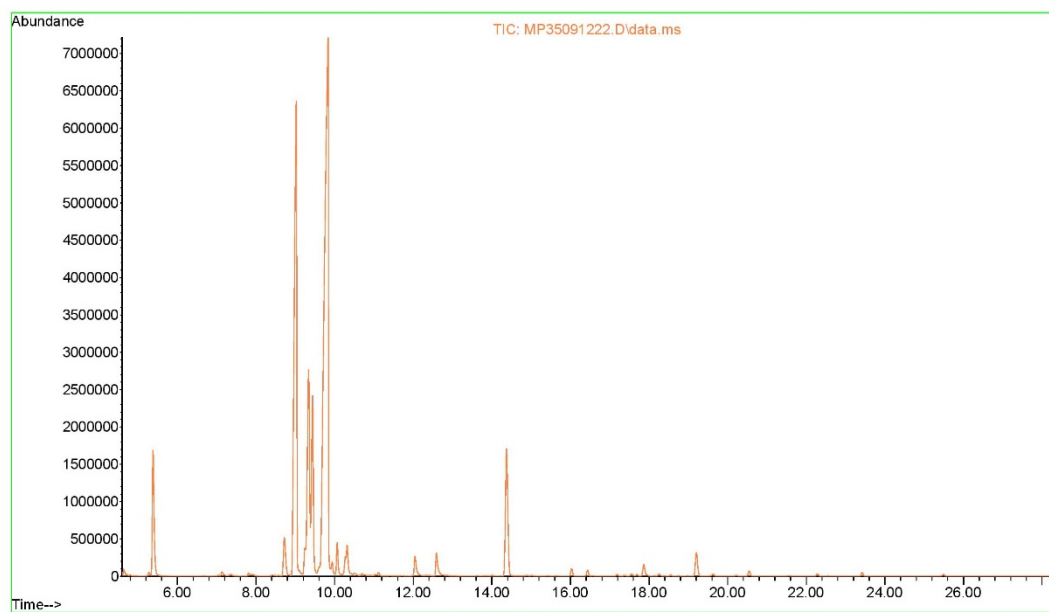


Figure 271 GC-MS chromatogram of *M. x piperita* after 30 days of storage

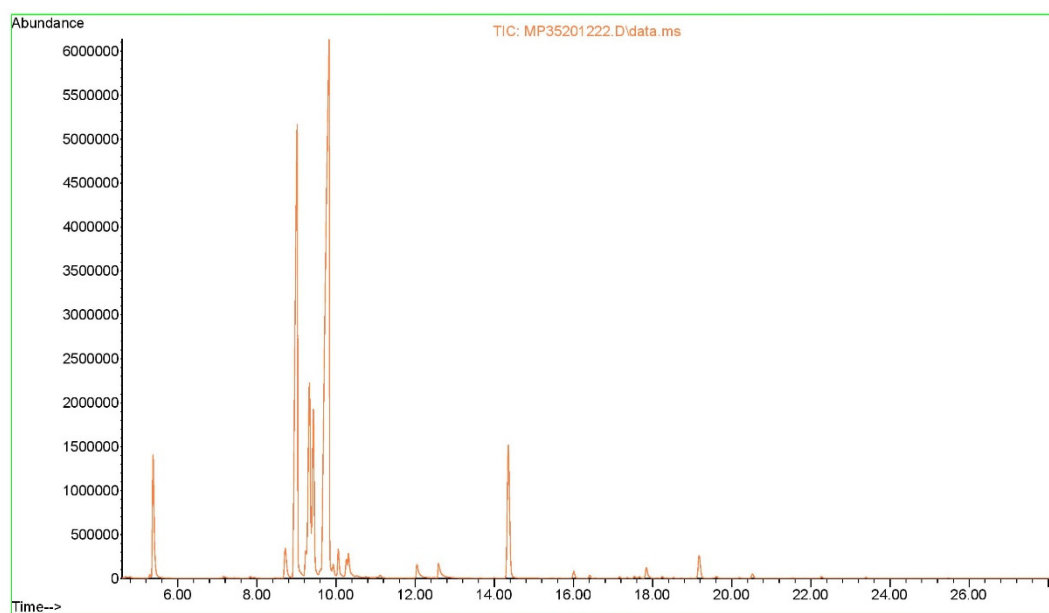


Figure 272 GC-MS chromatogram of *M. x piperita* after 40 days of storage

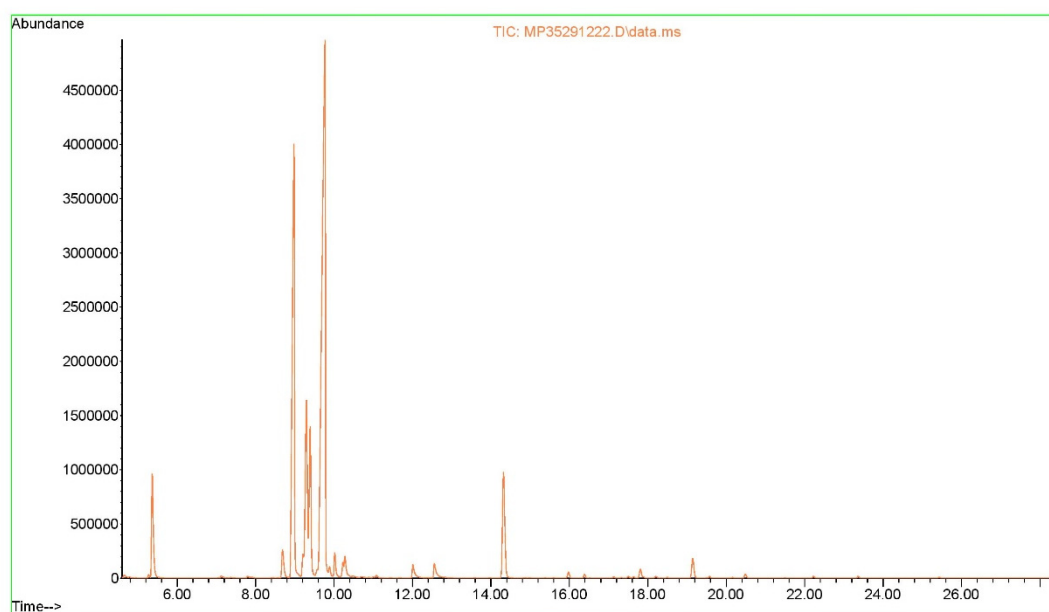


Figure 273 GC-MS chromatogram of *M. x piperita* after 50 days of storage

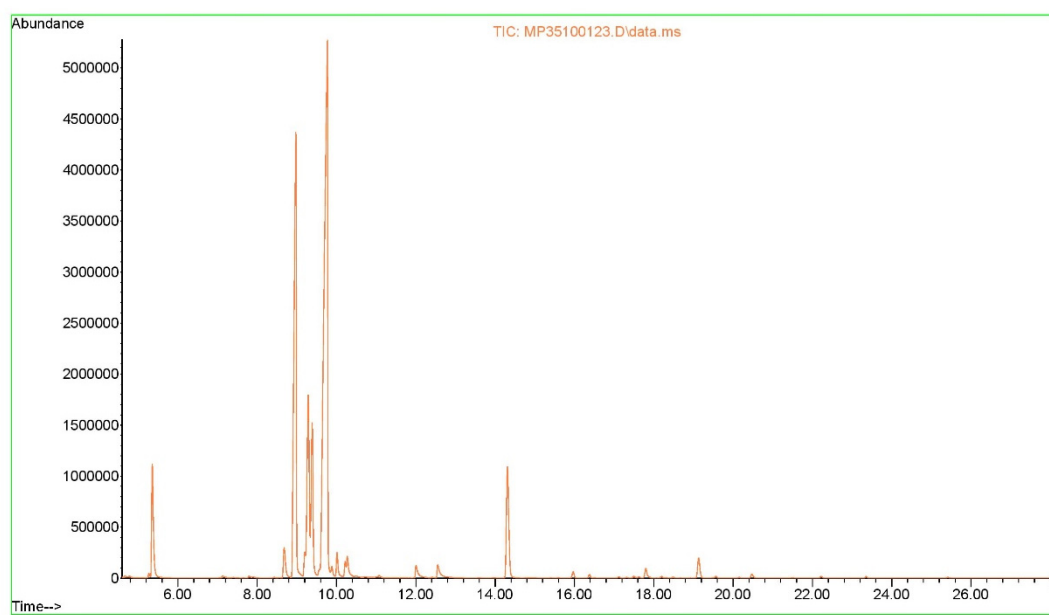


Figure 274 GC-MS chromatogram of *M. x piperita* after 60 days of storage

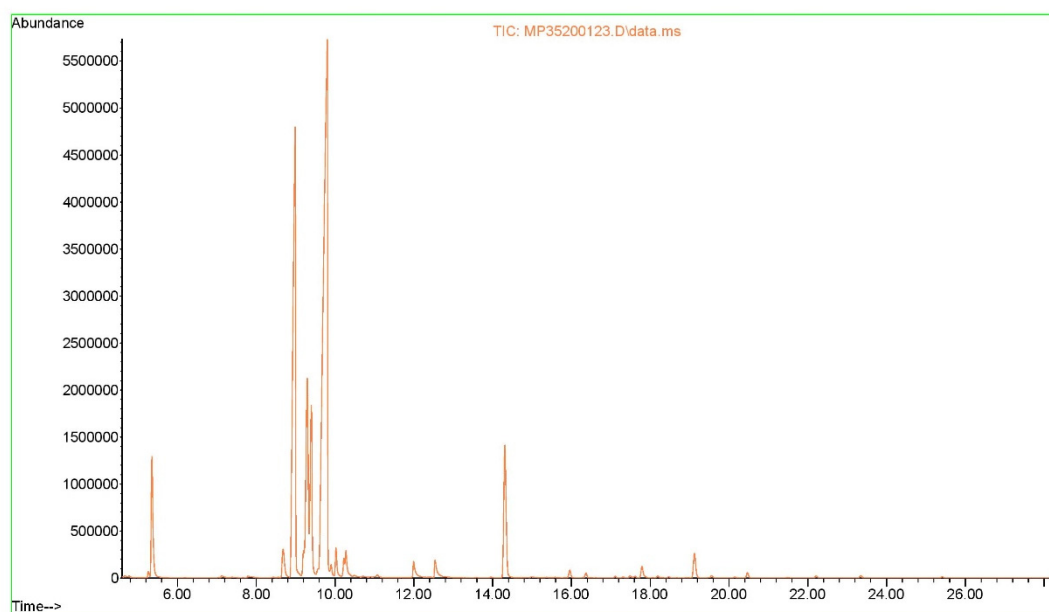


Figure 275 GC-MS chromatogram of *M. x piperita* after 70 days of storage

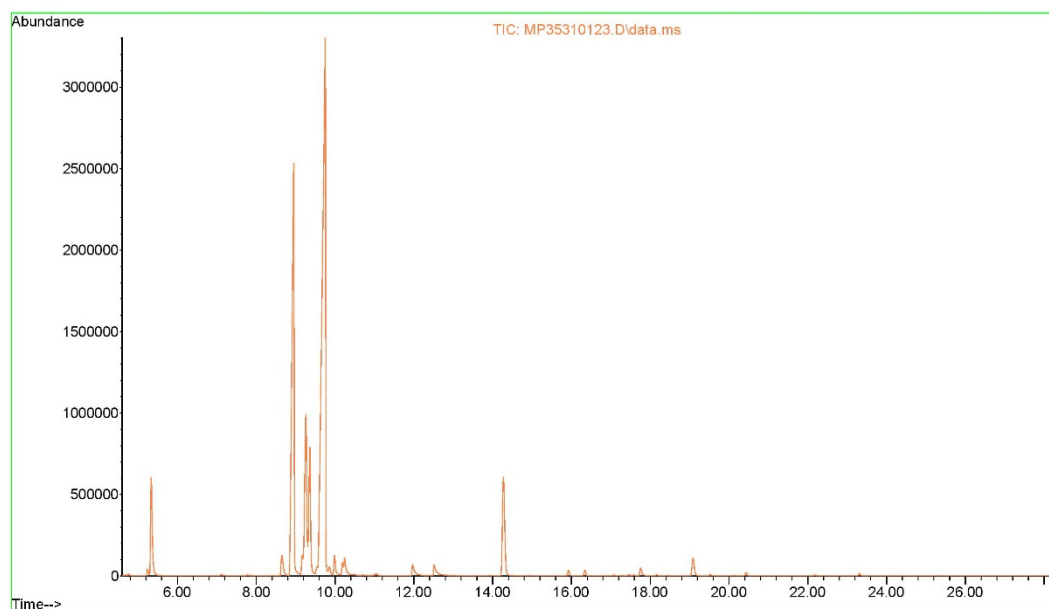


Figure 276 GC-MS chromatogram of *M. x piperita* after 80 days of storage

### 6.5. GC-MS chromatograms of the *M. x piperita* essential oil during storage in sealed glass ampoules at 45 °C for 3 months

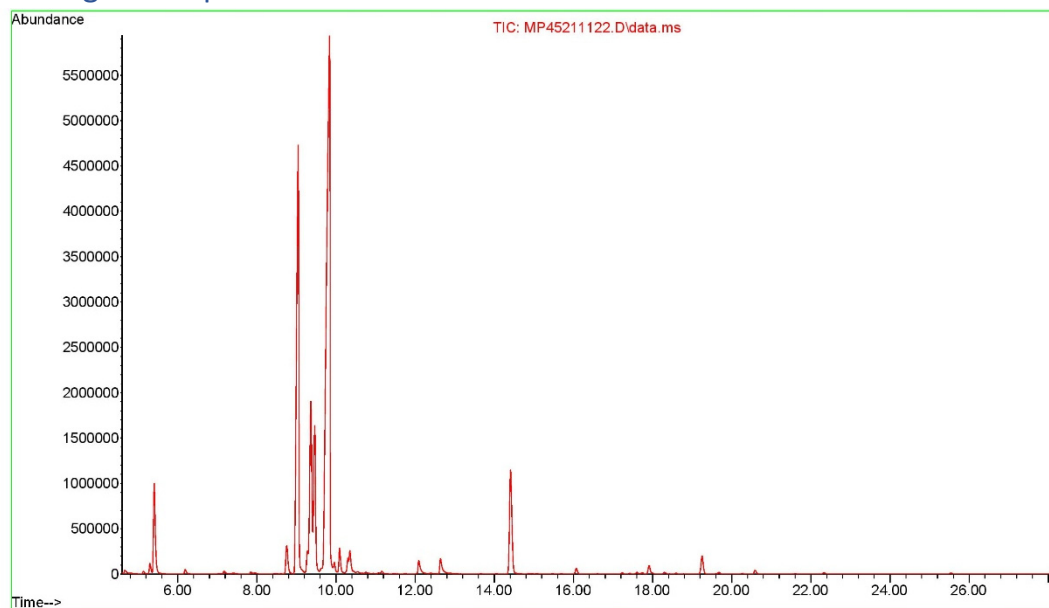


Figure 277 GC-MS chromatogram of *M. x piperita* after 10 days of storage

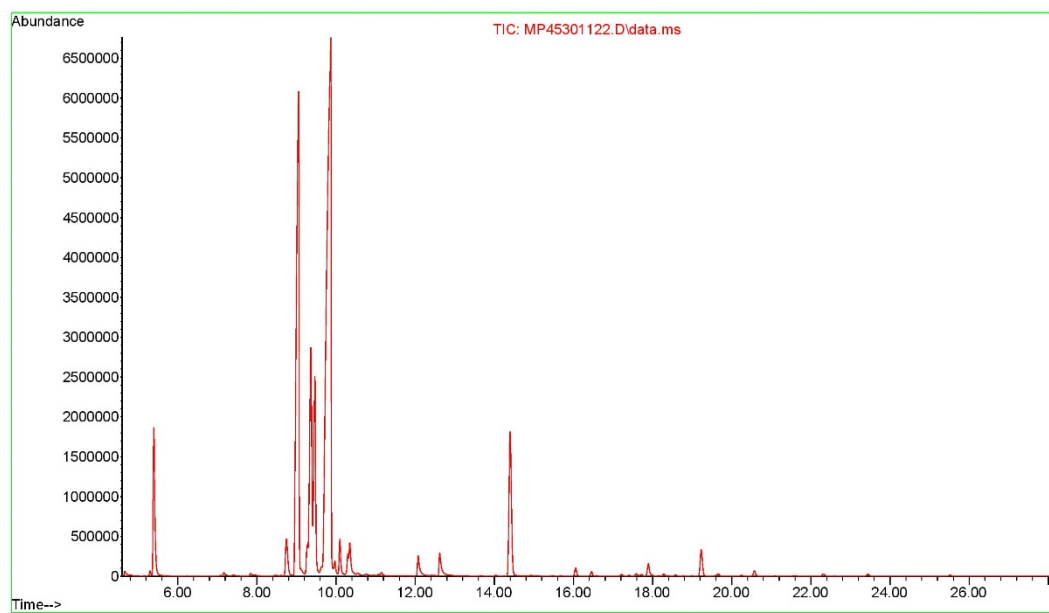


Figure 278 GC-MS chromatogram of *M. x piperita* after 20 days of storage

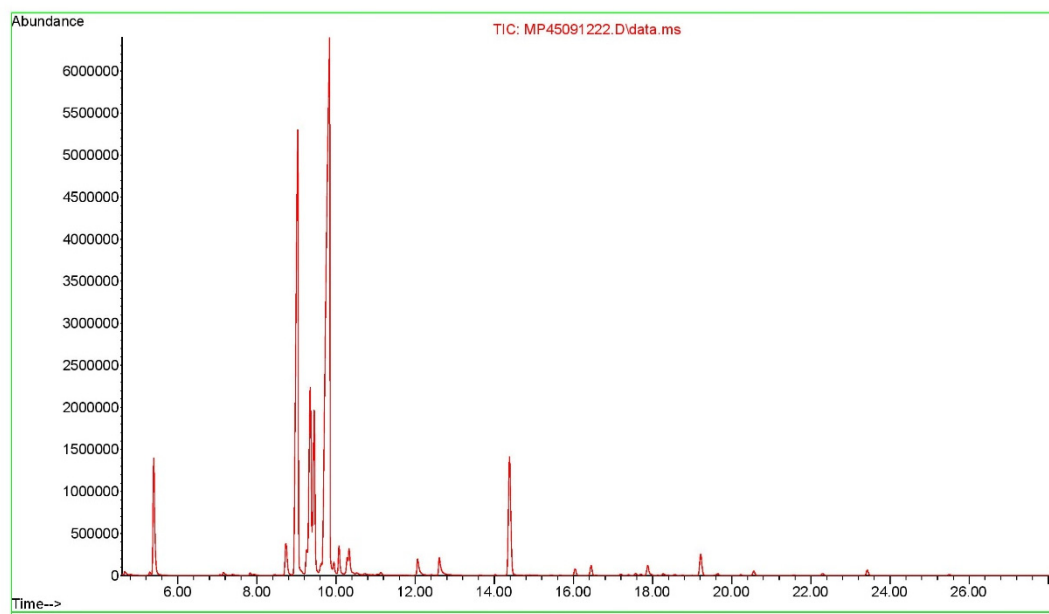


Figure 279 GC-MS chromatogram of *M. x piperita* after 30 days of storage

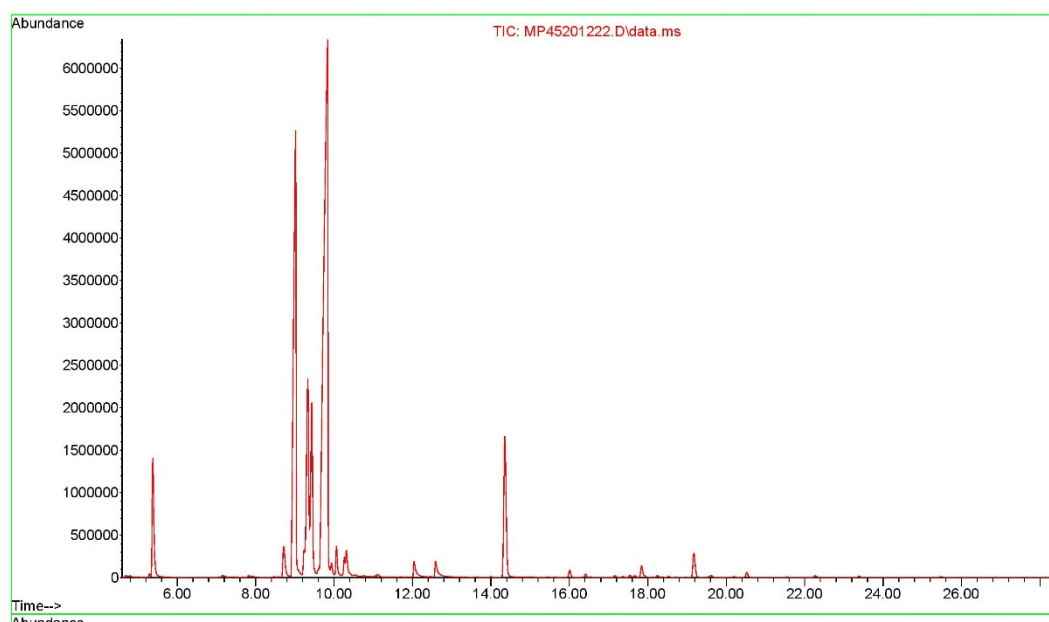


Figure 280 GC-MS chromatogram of *M. x piperita* after 40 days of storage

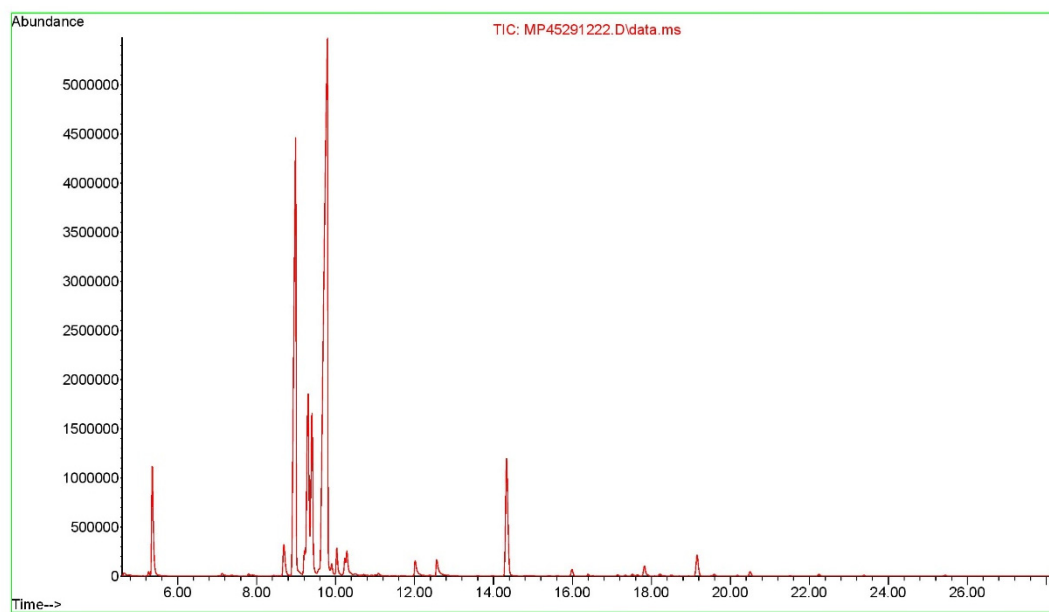


Figure 281 GC-MS chromatogram of *M. x piperita* after 50 days of storage

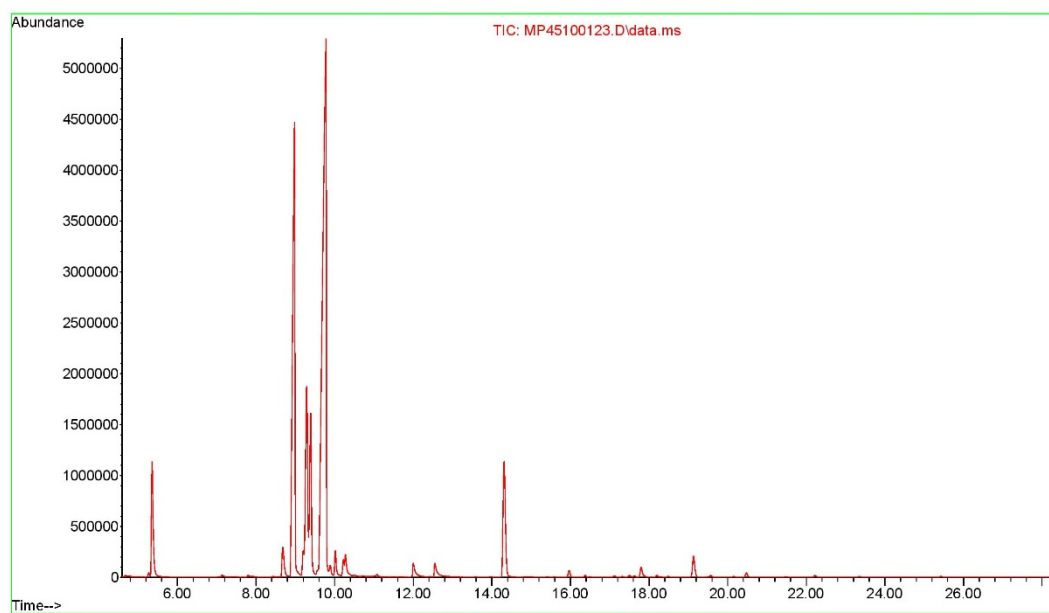


Figure 282 GC-MS chromatogram of *M. x piperita* after 60 days of storage

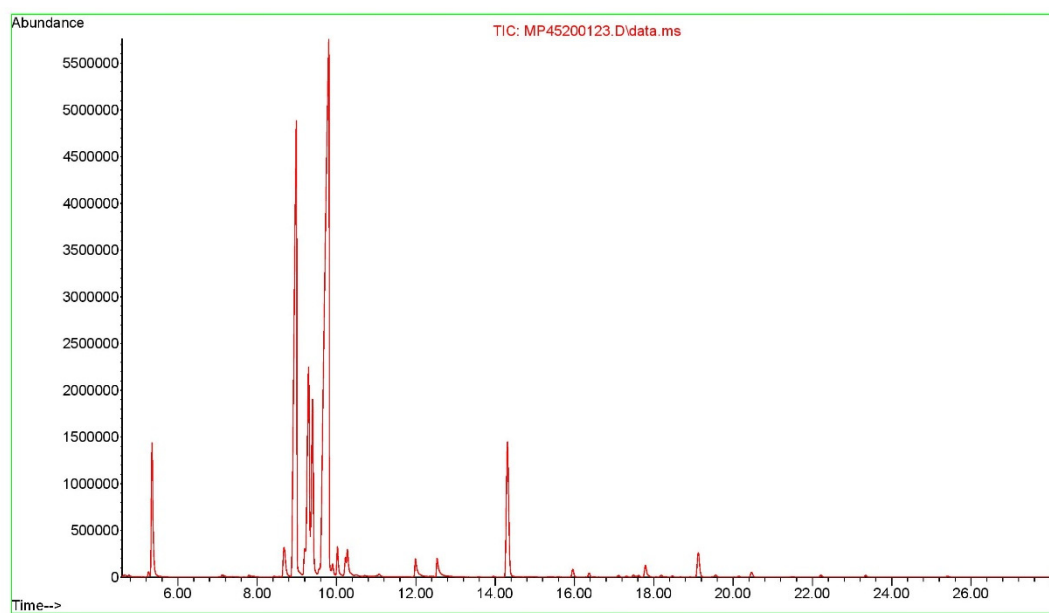


Figure 283 GC-MS chromatogram of *M. x piperita* after 70 days of storage

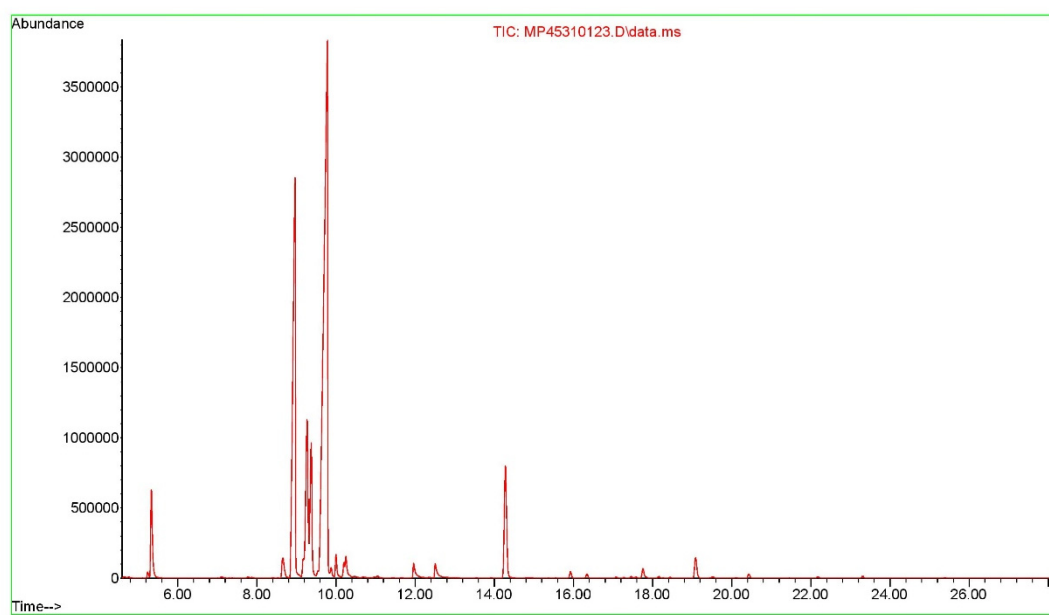


Figure 284 GC-MS chromatogram of *M. x piperita* after 80 days of storage

## 6.6. GC-MS chromatograms of the *M. x piperita* essential oil during storage in glass tubes sealed with cap at 35 °C for 3 months

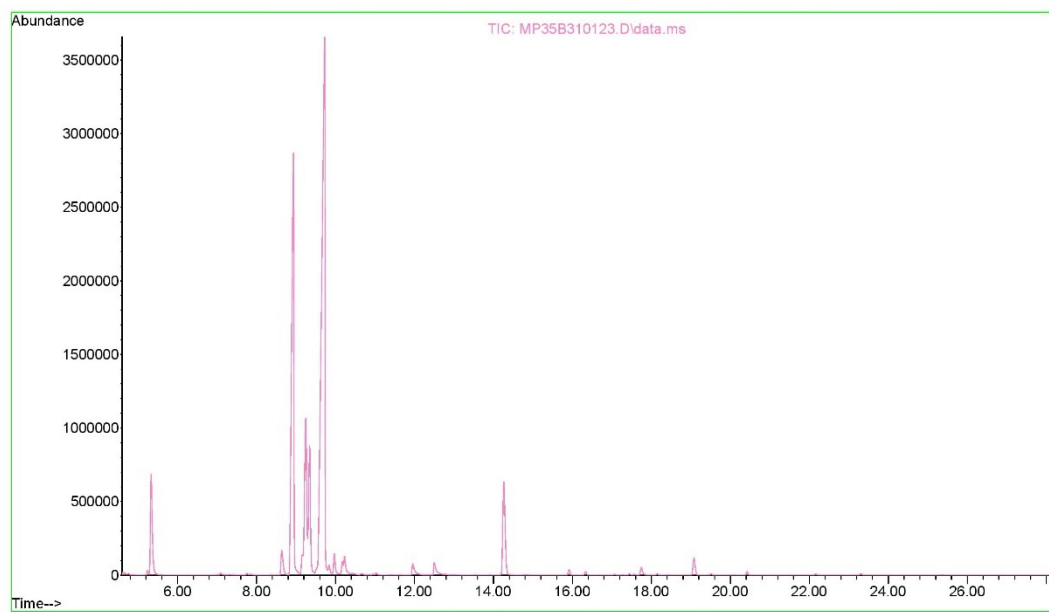


Figure 285 GC-MS chromatogram of *M. x piperita* after 10 days of storage

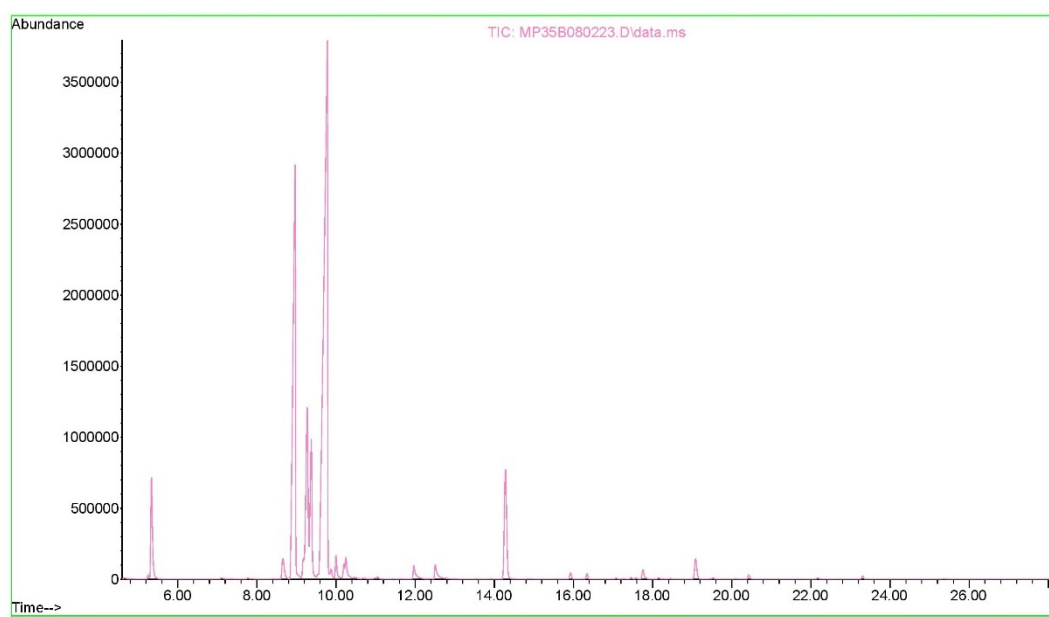


Figure 286 GC-MS chromatogram of *M. x piperita* after 20 days of storage

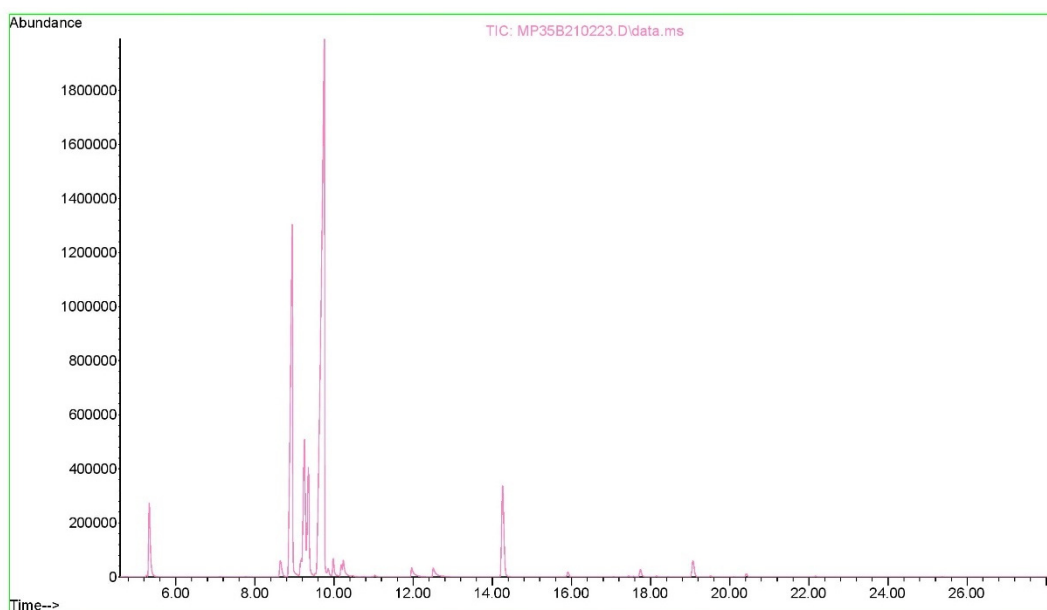


Figure 287 GC-MS chromatogram of *M. x piperita* after 30 days of storage

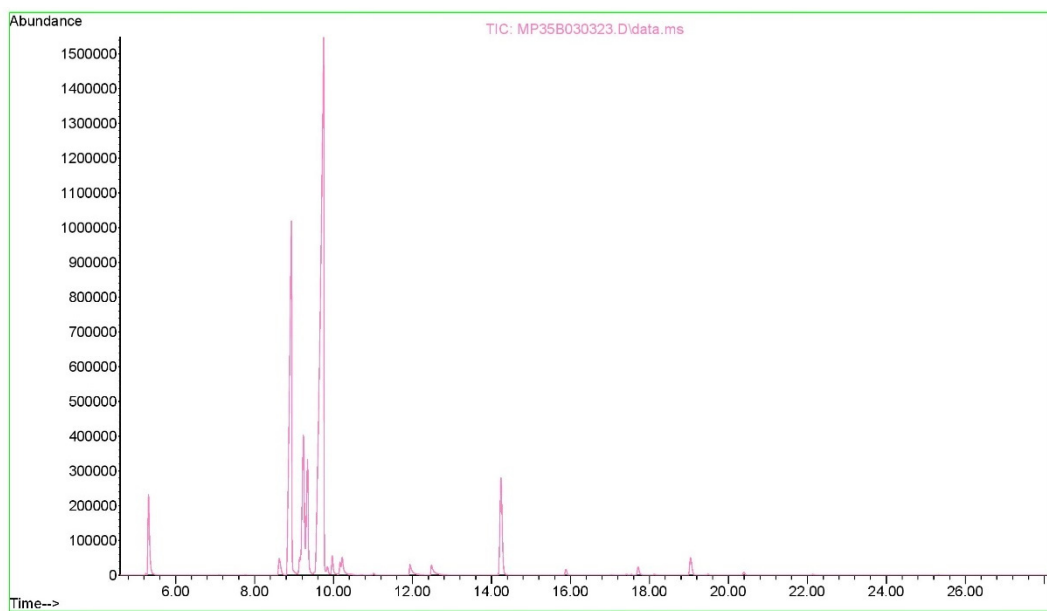


Figure 288 GC-MS chromatogram of *M. x piperita* after 40 days of storage

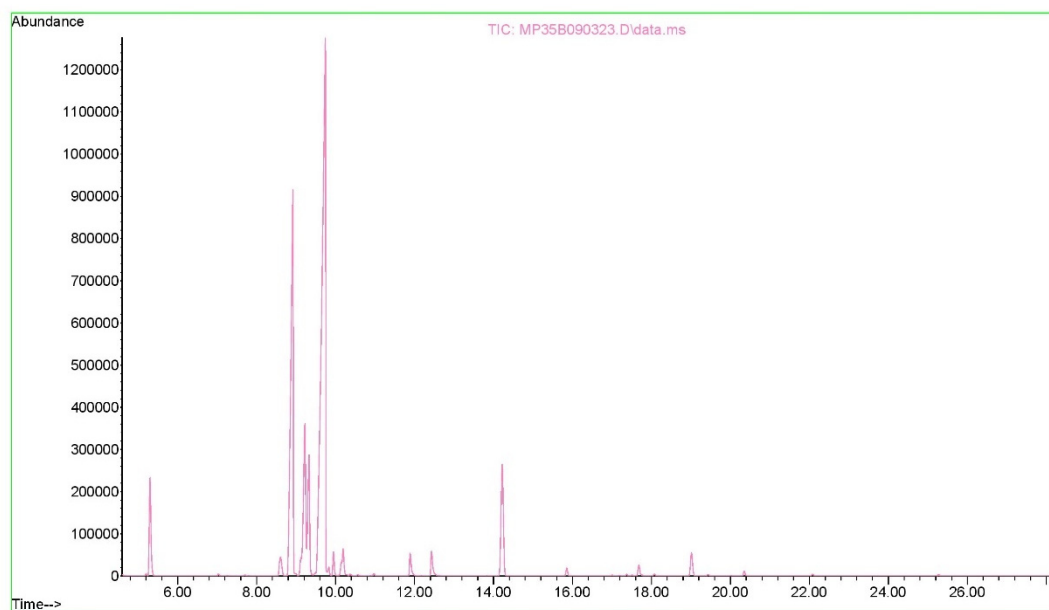


Figure 289 GC-MS chromatogram of *M. x piperita* after 50 days of storage

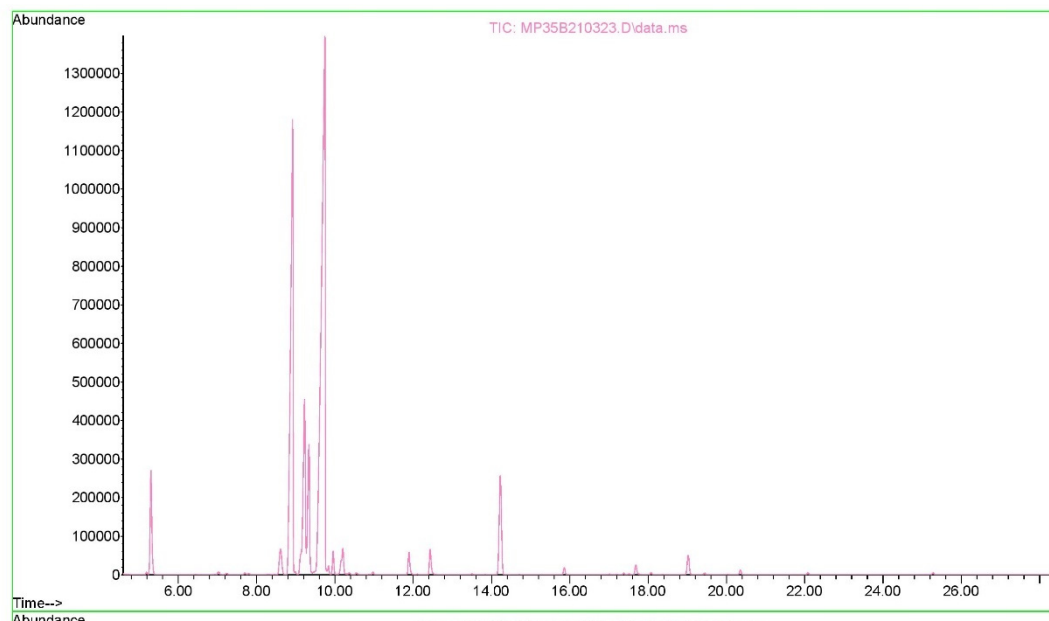


Figure 290 GC-MS chromatogram of *M. x piperita* after 60 days of storage

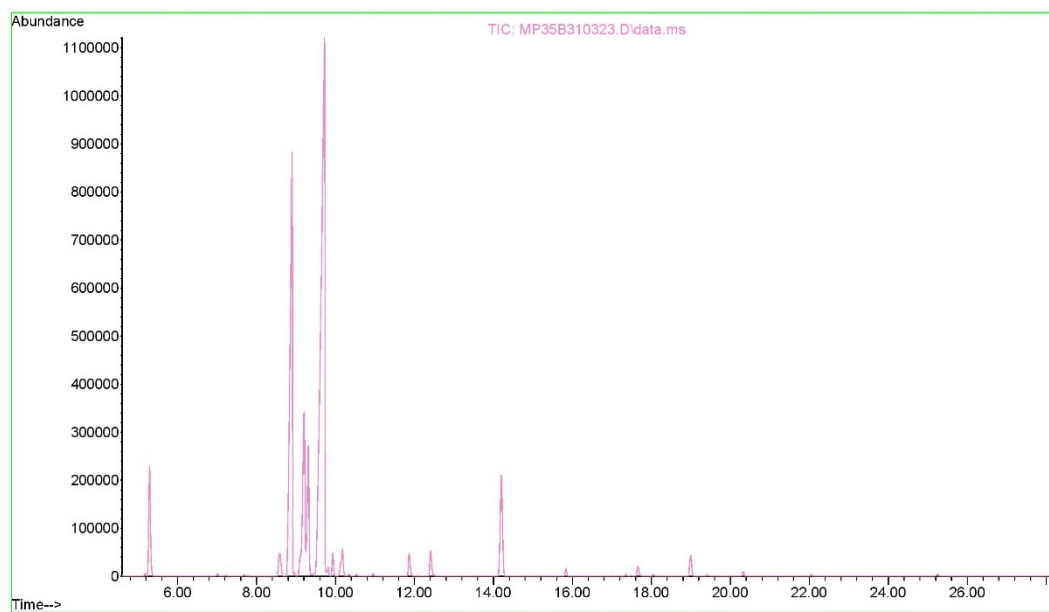


Figure 291 GC-MS chromatogram of *M. x piperita* after 70 days of storage

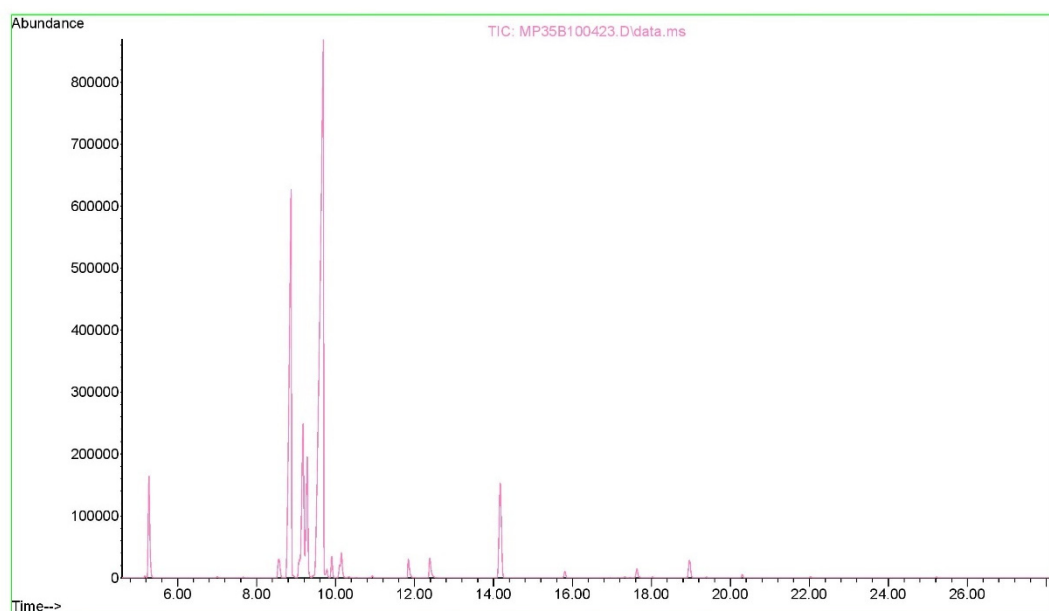


Figure 292 GC-MS chromatogram of *M. x piperita* after 80 days of storage

6.7. GC-MS chromatograms of the *M. x piperita* essential oil during storage in glass tubes sealed with cap at 45 °C for 3 months

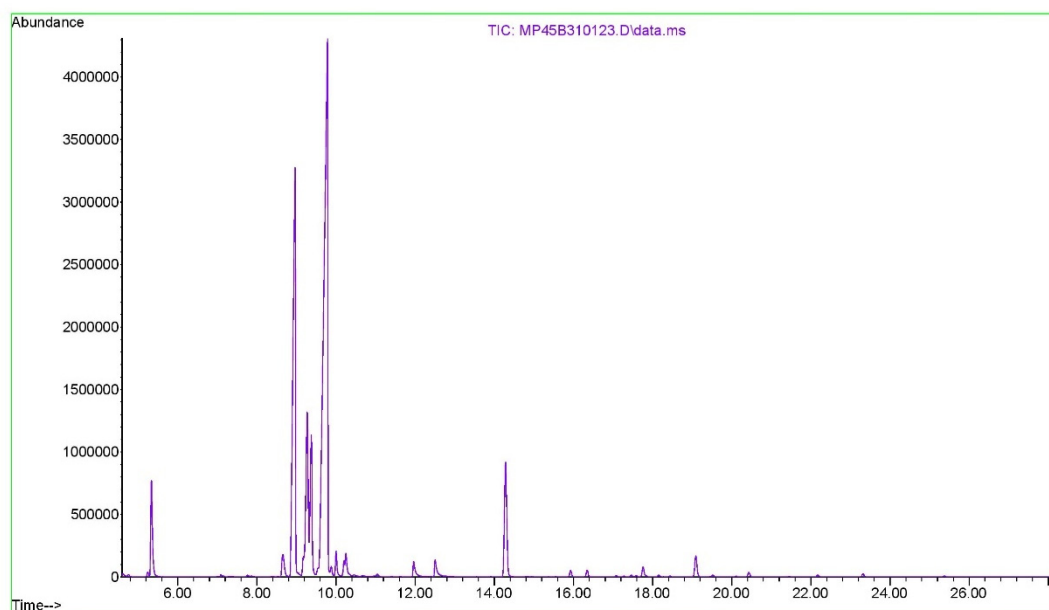


Figure 293 GC-MS chromatogram of *M. x piperita* after 10 days of storage

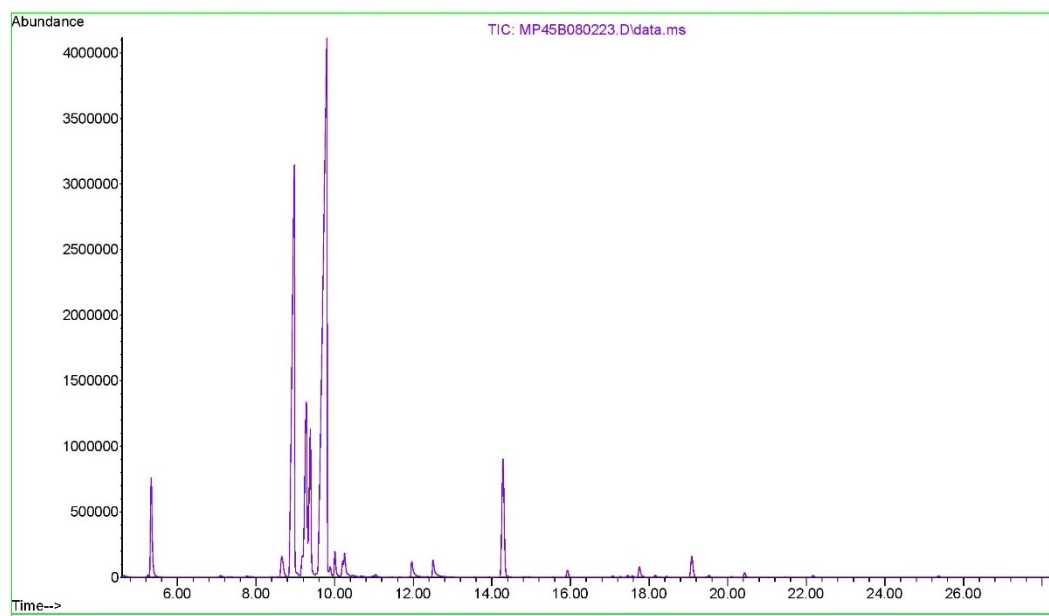


Figure 294 GC-MS chromatogram of *M. x piperita* after 20 days of storage

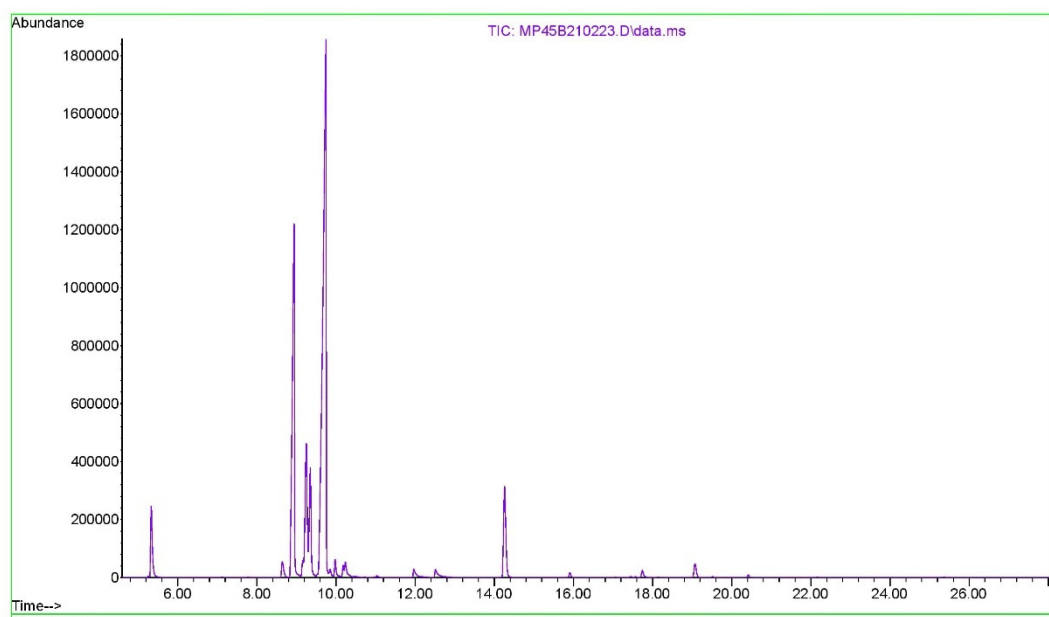


Figure 295 GC-MS chromatogram of *M. x piperita* after 30 days of storage

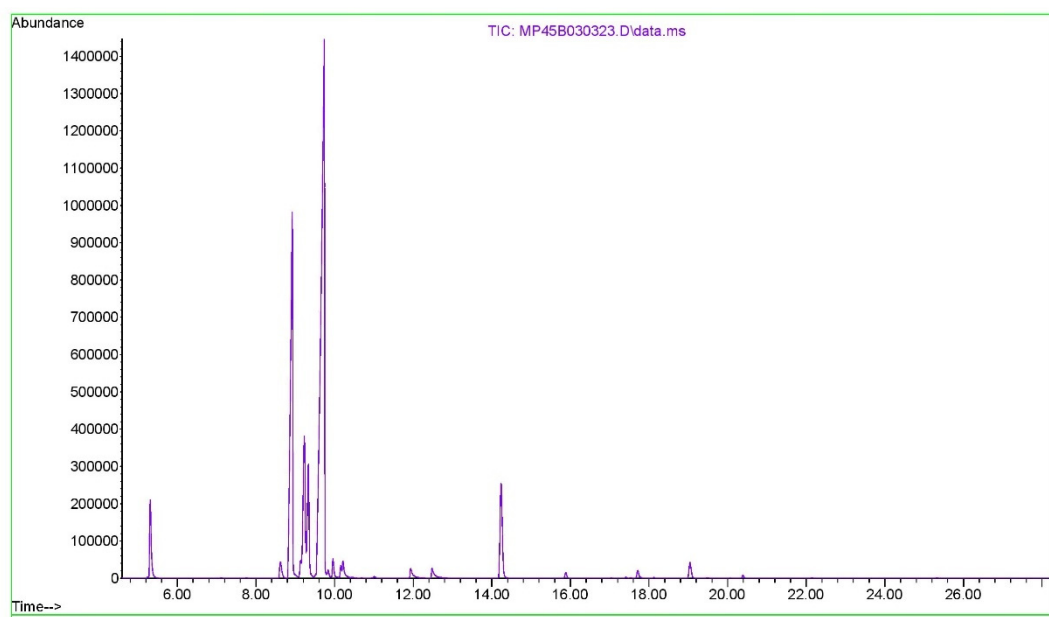


Figure 296 GC-MS chromatogram of *M. x piperita* after 40 days of storage

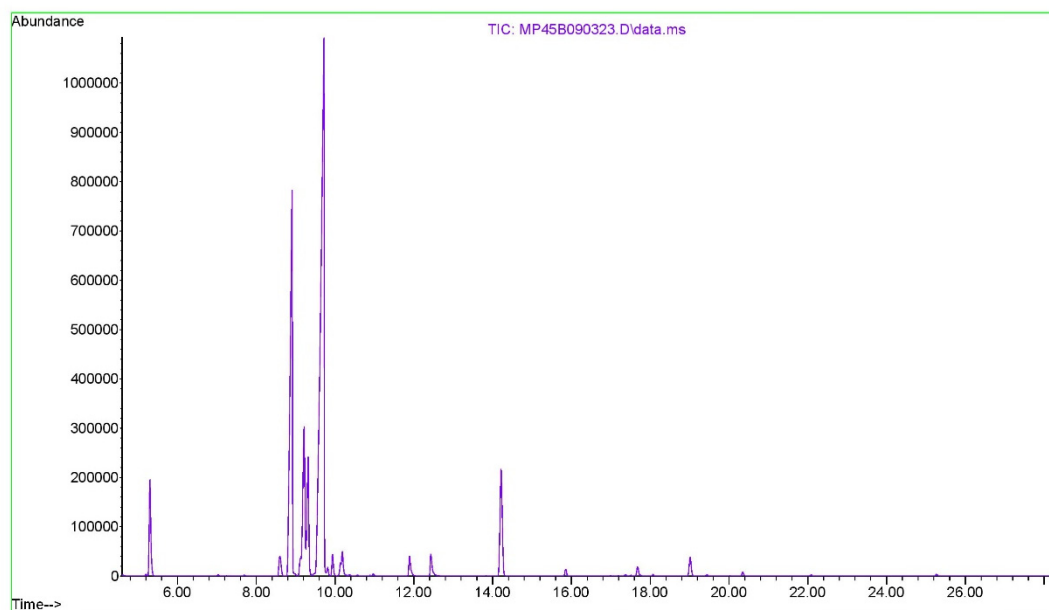


Figure 297 GC-MS chromatogram of *M. x piperita* after 50 days of storage

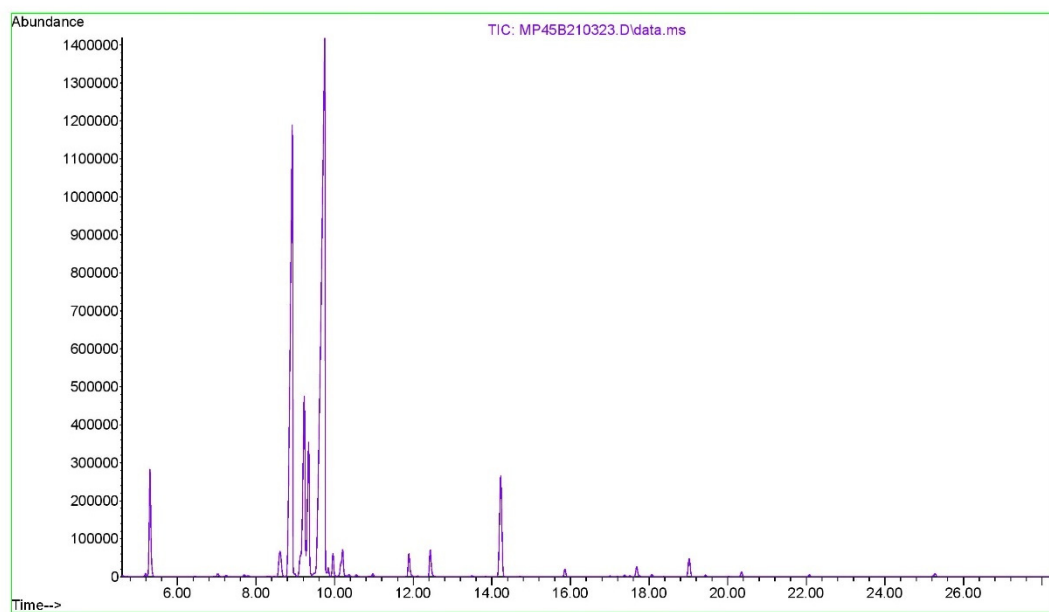


Figure 298 GC-MS chromatogram of *M. x piperita* after 60 days of storage

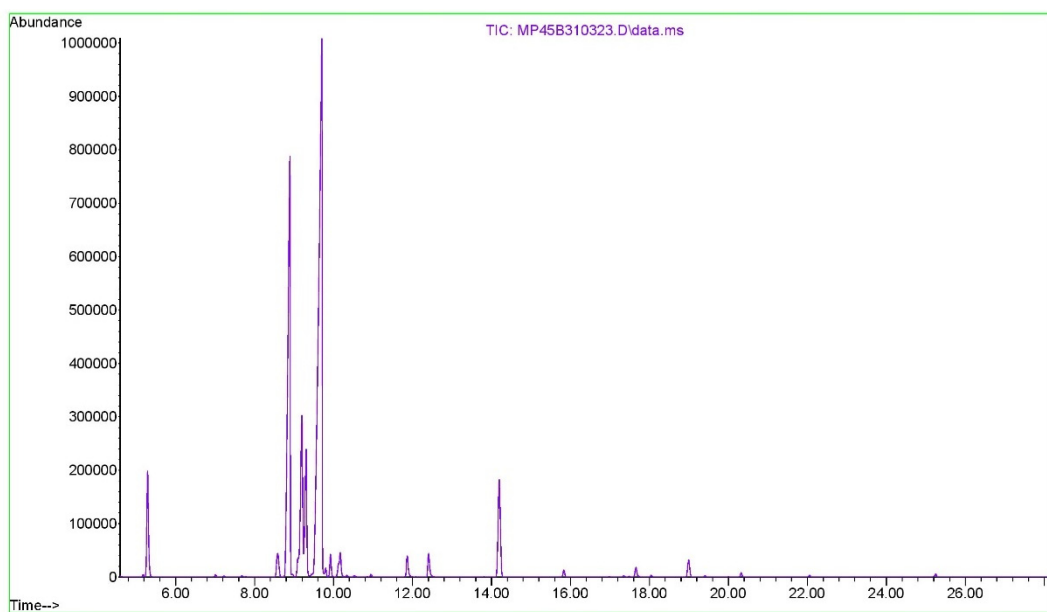


Figure 299 GC-MS chromatogram of *M. x piperita* after 70 days of storage

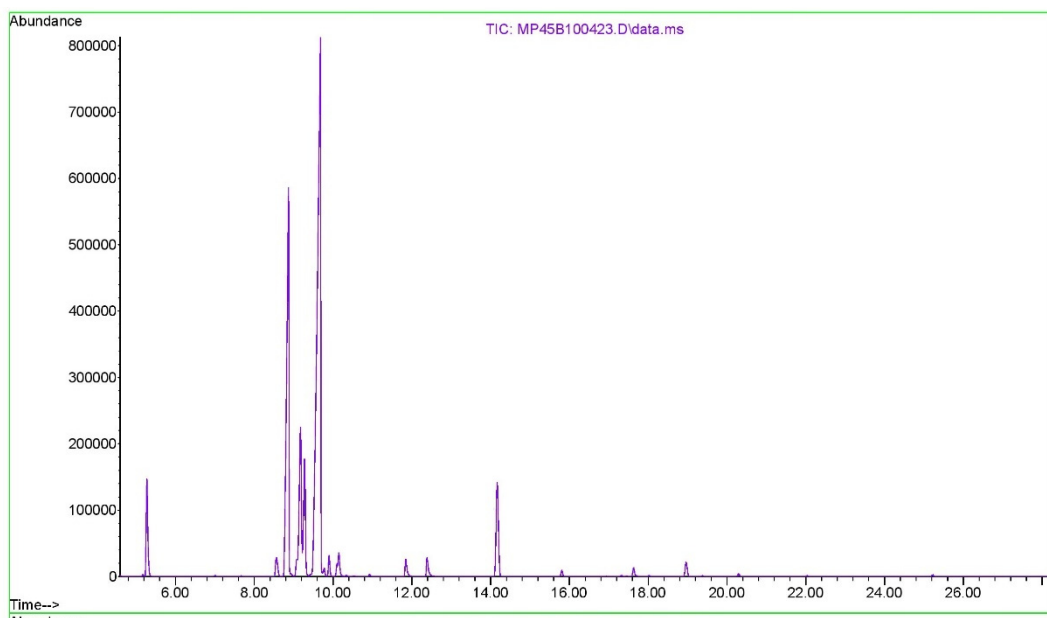


Figure 300 GC-MS chromatogram of *M. x piperita* after 80 days of storage

### 6.8. GC-MS chromatograms of the *M. x piperita* essential oil during storage in glass tubes sealed with cap at 4 °C for 6 months

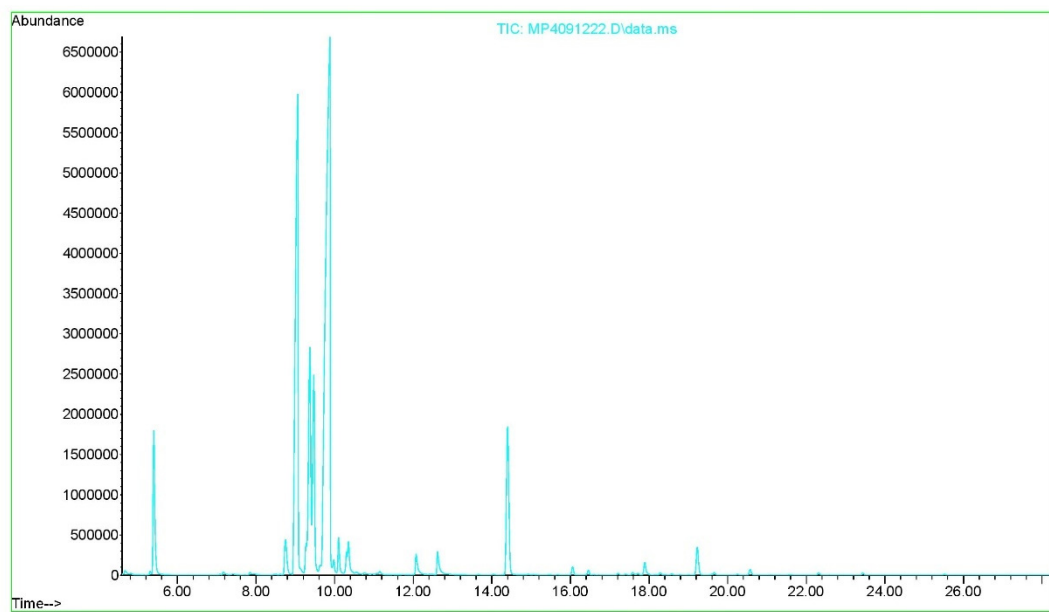


Figure 301 GC-MS chromatogram of *M. x piperita* after 30 days of storage

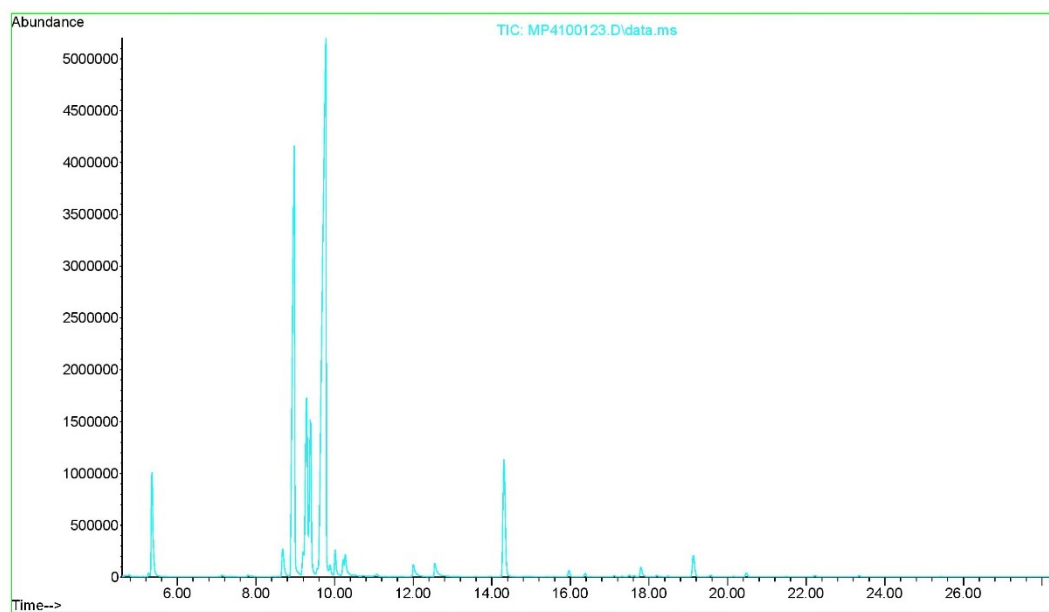


Figure 302 GC-MS chromatogram of *M. x piperita* after 60 days of storage

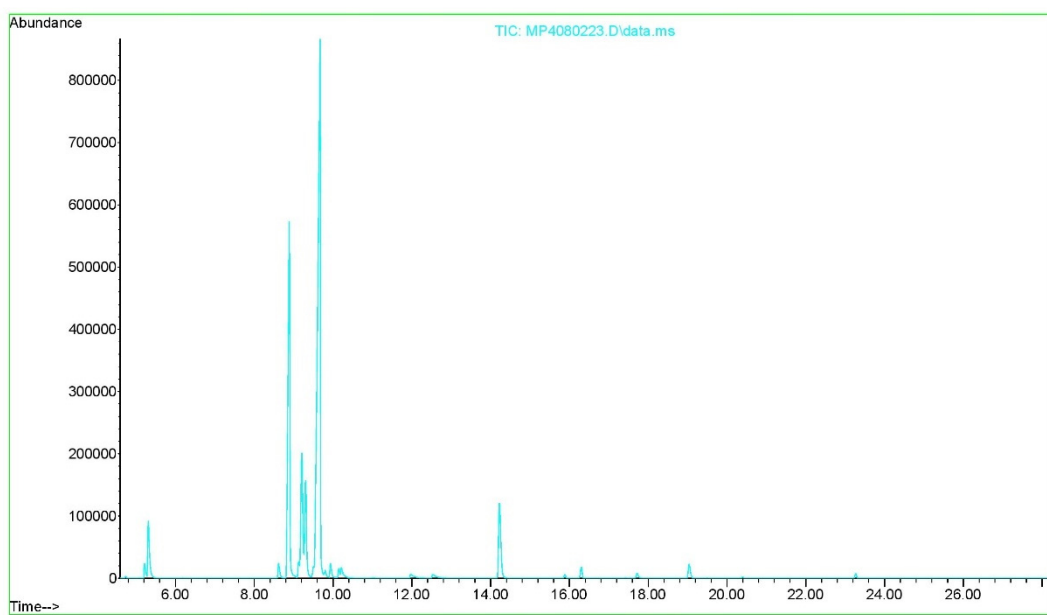


Figure 303 GC-MS chromatogram of *M. x piperita* after 90 days of storage

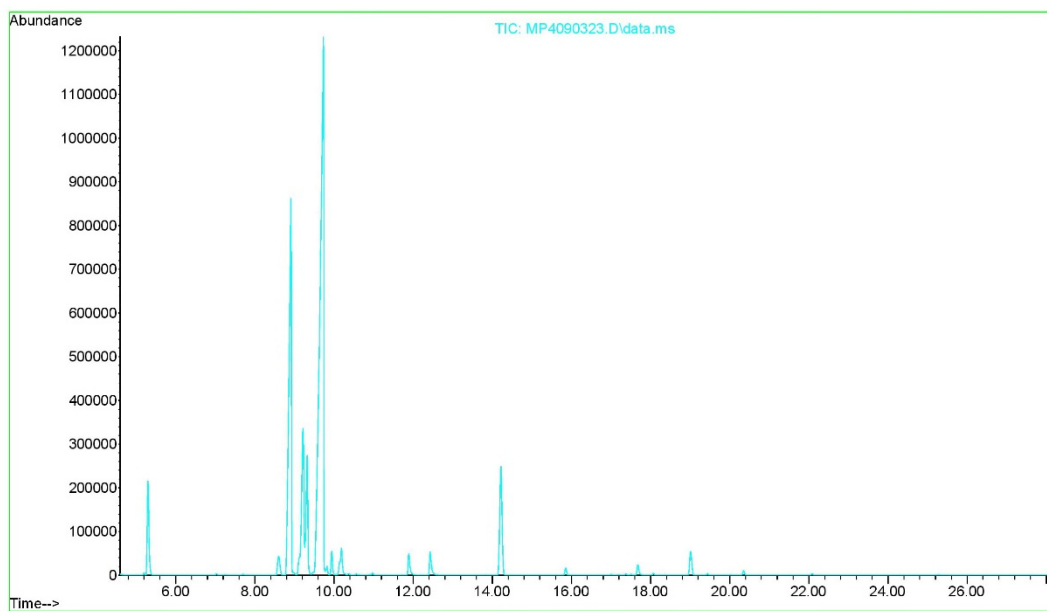


Figure 304 GC-MS chromatogram of *M. x piperita* after 120 days of storage

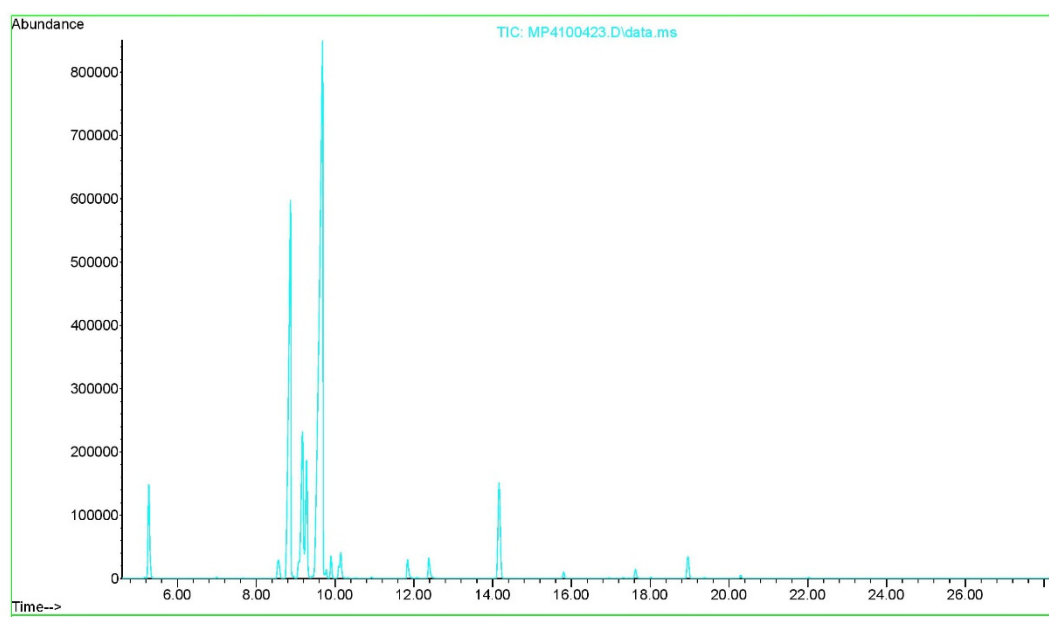


Figure 305 GC-MS chromatogram of *M. x piperita* after 150 days of storage

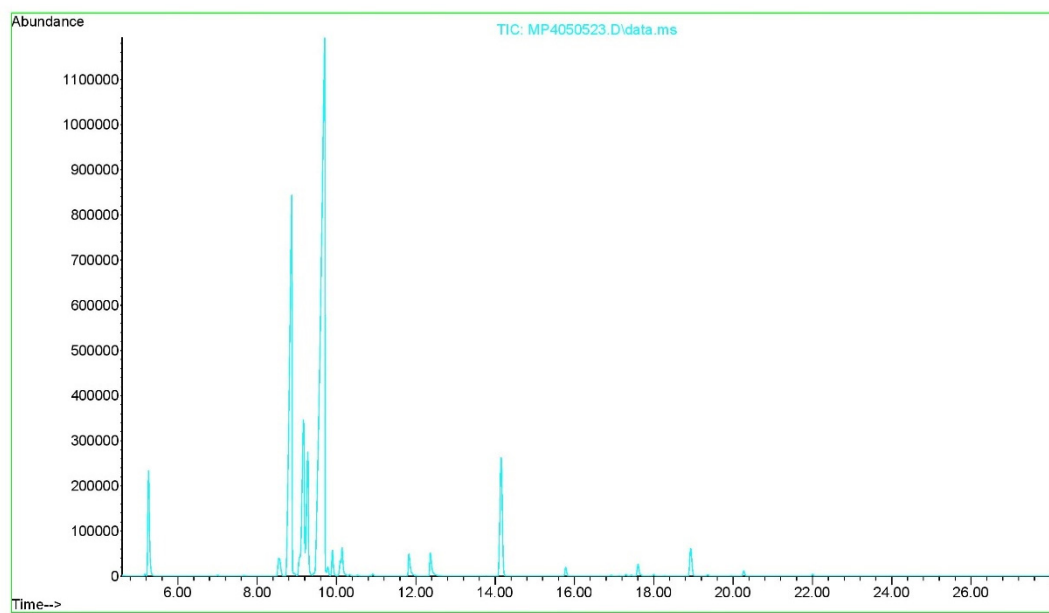


Figure 306 GC-MS chromatogram of *M. x piperita* after 180 days of storage

6.9. GC-MS chromatogram of the *M. x piperita* essential oil during storage in metal container at 4 °C for 6 months

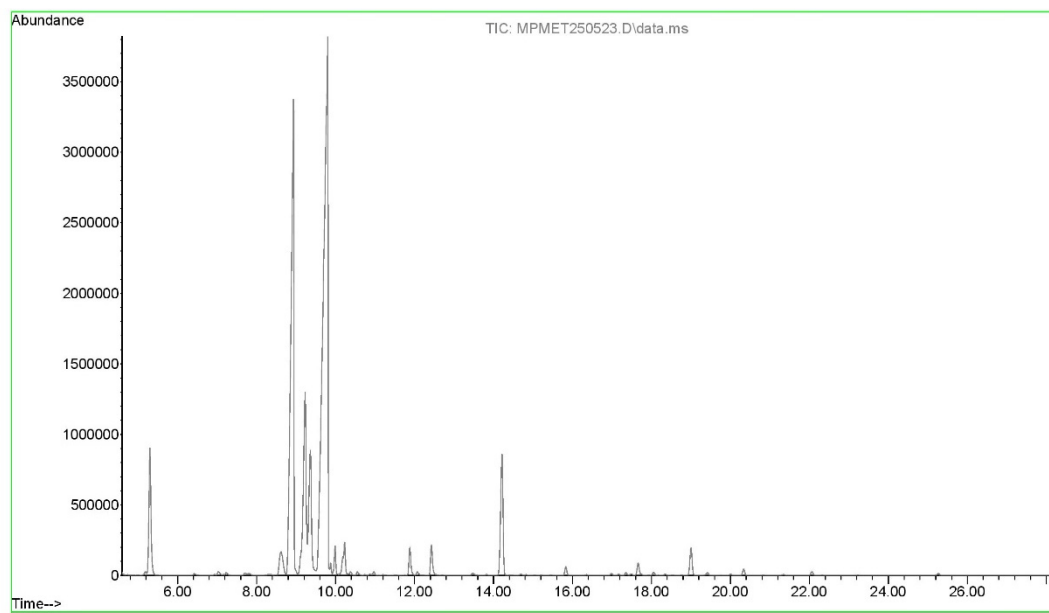


Figure 307 GC-MS chromatogram of *M. x piperita* after 180 days of storage

6.10. GC-MS chromatogram of the *M. x piperita* essential oil during storage in sealed glass ampoules at 4 °C for 6 months

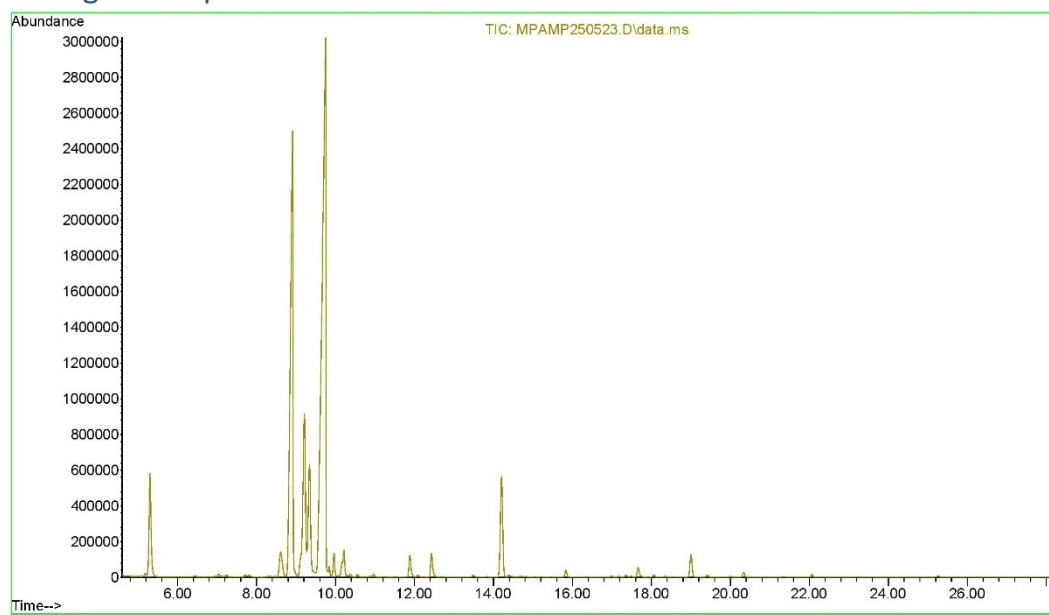


Figure 308 GC-MS chromatogram of *M. x piperita* after 180 days of storage

6.11. GC-MS chromatogram of the *M. x piperita* essential oil during storage in glass tubes sealed with cap at -20 °C for 6 months

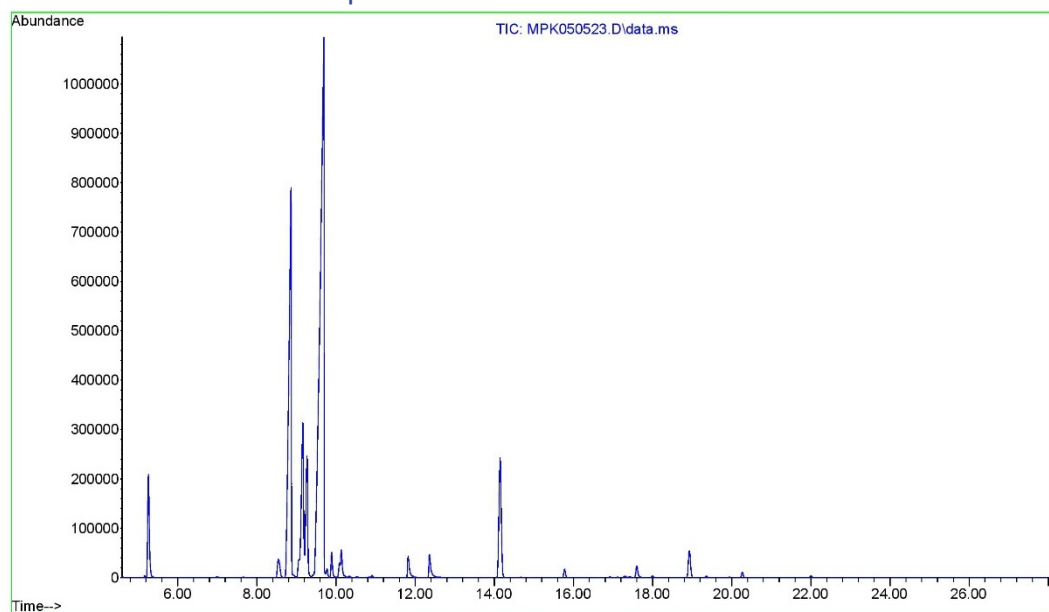


Figure 309 GC-MS chromatogram of *M. x piperita* after 180 days of storage