Electronic Supplementary Material (ESI) for RSC Advances.


**Supplementary Information**

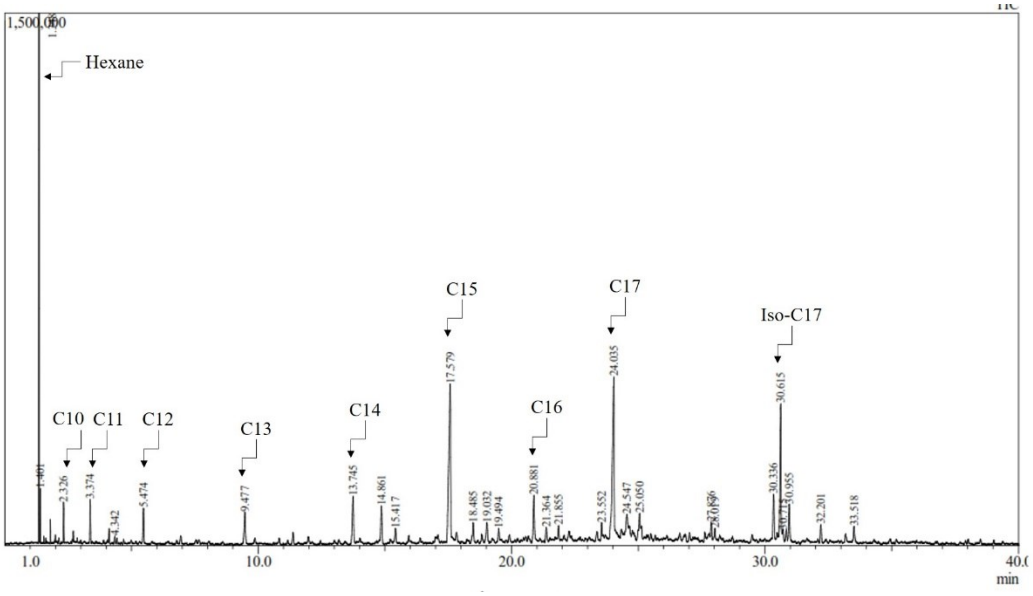


Fig. S1 GC-MS spectra of deoxygenated liquid product using 10%Ni/Al-MCM-41 catalyst

**Table S1. Composition of liquid products of *Reutealis trisperma* oil deoxygenation using Ni/Al-MCM-41 by GC-MS analysis**

| Retention Time | Compound name | Selectivity (%) | | | | |
|---|---|---|---|---|---|---|
| | | Al-MCM-41 | 5%Ni/Al-MCM-41 | 10%Ni/Al-MCM-41 | 15%Ni/Al-MCM-41 | 20%Ni/Al-MCM-41 |
| Alkane | | | | | | |
| 1.539 | Octane | 0.57 | 0.11 | - | - | 0.47 |
| 1.801 | Nonane | 1.98 | 0.27 | - | 0.25 | 1.61 |
| 2.326 | Decane | 3.48 | 0.50 | 1.17 | 0.48 | 2.31 |
| 3.388 | Undecane | 4.74 | 0.83 | 1.90 | 0.74 | 2.61 |
| 5.512 | Dodecane | 6.26 | 0.87 | 2.42 | 1.02 | 2.30 |
| 9.546 | Tridecane | 10.72 | 3.93 | 4.21 | 2.1 | 4.37 |
| 13.802 | Tetradecane | 8.72 | 5.36 | 6.13 | 4.99 | 7.45 |
| 17.589 | Pentadecane | 17.03 | 32.09 | 20.95 | 19.85 | 39.52 |
| 20.895 | Hexadecane | 0.90 | 5.83 | 5.78 | 6.58 | - |
| 23.979 | Heptadecane | 2.81 | 7.64 | 21.34 | 19.98 | - |
| 26.802 | Octadecane | - | 0.82 | - | 3.00 | - |
| 30.615 | Iso-heptadecane | 1.42 | 11.85 | 20.53 | 18.71 | 4.87 |
| Alkene | | | | | | |
| 1.639 | 1-Octene | - | 0.26 | - | - | 0.21 |
| 1.994 | 1-Nonene | 1.01 | 0.45 | - | - | 0.66 |
| 2.711 | 1-Decene | 1.71 | 0.64 | - | - | 1.43 |
| 4.141 | 1-Dodecene | 4.29 | 2.86 | - | 0.69 | 2.00 |
| 4.45 | Undecene | - | 0.63 | | - | |
| 10.64 | Tetradecene | - | 1.14 | - | - | - |
| 11.421 | 1-Tridecene | 1.93 | 1.72 | - | 0.50 | 0.52 |
| 18.814 | 3-Octadecene | - | - | - | 0.67 | - |
| 19.031 | 1-Hexadecene | - | 0.96 | 1.22 | - | - |
| 19.494 | 1-Pentadecene | - | 0.35 | 0.85 | 0.94 | - |
| 24.769 | 1-Heptadecene | - | 2.21 | 2.93 | 6.75 | - |
| Cyclic | | | | | | |
| 1.396 | Methylcyclopentane | 0.40 | 0.64 | 1.06 | 0.58 | 3.66 |
| 2.245 | Propylcyclohexane | - | - | - | - | 0.43 |
| 4.447 | Cyclopropane, 1,2-dibutyl | 0.52 | - | - | - | 2.53 |
| 13.036 | Cyclohexane, (4-methylpentyl) | - | 0.33 | - | - | - |

| Retention Time | Compound name | Selectivity (%) | | | | |
|---|---|---|---|---|---|---|
| | | Al-MCM-41 | 5%Ni/Al-MCM-41 | 10%Ni/Al-MCM-41 | 15%Ni/Al-MCM-41 | 20%Ni/Al-MCM-41 |
| 20.655 | Undecylcyclohexane | - | 0.20 | - | 0.40 | - |
| 23.363 | Cyclodecane-octyl | - | - | - | 0.85 | - |
| 23.689 | Cyclohexane, 1,2-dimethyl-3-pentyl-4-propyl- | - | - | - | 0.25 | |
| 24.335 | Cyclohexane, hexaethyl | - | - | - | 1.05 | - |
| 25.398 | Cyclooctane,tetradecanyl | - | - | - | 0.44 | - |
| 25.492 | Cyclohexane, 1,2-dimethyl-3-pentyl-4-propyl- | - | - | - | 0.54 | - |
| 27.014 | Undecylcyclohexane | - | - | - | 0.60 | - |
| Aromatics | | | | | | |
| 5.192 | o-xylene | 0.66 | 0.23 | - | - | - |
| 9.919 | n-butylbenzene | 1.09 | 0.81 | - | - | 0.72 |
| 10.871 | 2-propyltoluene | 1.17 | 0.86 | - | - | 0.81 |
| 14.058 | Pentylbenzene | 0.78 | 0.45 | - | - | - |
| 14.846 | Benzene, (1,2-dimethylpropyl) | - | - | - | - | 6.18 |
| 14.902 | 2-Phenylpentane | 8.23 | 2.95 | 3.12 | 1.46 | - |
| 17.066 | Benzene, 1-ethyl-4-(2-methylpropyl)- | - | 0.65 | - | 0.57 | - |
| 17.133 | p-cymene | 1.95 | - | - | - | - |
| 17.863 | 1-Phenylhexane | 2.46 | 1.39 | - | 0.34 | 3.12 |
| 18.475 | Benzene, (1,3-dimethylbutyl) | - | - | - | - | 1.85 |
| 18.523 | 2-Methyl-4-phenylpentane | 3.36 | 2.50 | 1.25 | 1.36 | - |
| 21.884 | 1-Methyl-2-N-hexylbenzene | 1.52 | - | 0.98 | 0.61 | 0.85 |
| 26.628 | Benzene, 1,1'-(1,1,3,3-tetramethyl-1,3-propanediyl)bis- | - | - | - | 0.54 | - |
| 28.019 | Hexan,2-phenyl-3-propyl | - | - | 0.74 | 0.81 | 0.94 |
| 30.715 | 2-Naphthalenamine, 1,2,3,4-tetrahydro-N-(1-methylethyl) | - | - | 0.93 | - | - |
| 32.201 | Benzene, 1,1'-(1,1,3,3-tetramethyl-1,3-propanediyl)bis- | - | - | 1.62 | - | - |

| Retention Time | Compound name | Selectivity (%) | | | | |
|---|---|---|---|---|---|---|
| | | Al-MCM-41 | 5%Ni/Al-MCM-41 | 10%Ni/Al-MCM-41 | 15%Ni/Al-MCM-41 | 20%Ni/Al-MCM-41 |
| Carboxylic acid | | | | | | |
| 24.15 | Benzenepentanoic acid | - | - | - | 0.26 | - |
| 25.075 | Butanoic acid | 3.06 | - | - | - | - |
| 28.051 | Hexanoic acid | 2.33 | 1.51 | - | - | - |
| 30.846 | Heptanoic acid | 2.38 | 1.64 | - | - | 1.28 |
| 33.492 | Octanoic acid | 1.50 | 1.56 | - | - | 1.66 |
| 35.97 | Nonanoic acid | - | 0.57 | - | - | 1.21 |
| Alcohol | | | | | | |
| 14.81 | 1-Dodecanol | - | 0.59 | - | - | - |
| 15.403 | 1-Tetradecanol | - | - | - | - | 0.58 |
| 15.417 | 1-Tridecanol | - | 0.08 | 0.84 | 0.56 | - |
| 19.014 | Pentadecanol | - | 0.31 | - | 1.05 | - |
| 25.038 | 2-phenyl-1-propanol | - | - | - | - | 3.82 |
| Ketone | | | | | | |
| 18.465 | Hydroxybenzophenon | - | 0.57 | - | - | - |
| 25.16 | 2,2-dimethyl-5-phenyl-hexone | 0.99 | - | - | - | - |
| 30.7 | 5,9,9-Trimethylspiro[3.6]deca-5,7-dien-1-one | - | - | - | 0.45 | - |
| Aldehyde | | | | | | |
| 18.364 | 9-Octadecenal | - | 0.81 | - | - | - |