**supplementaryTable (6)**: Identification of phyto-components in garlic (*Allium sativum*) extracts using GC-MS

| Retention time (min) | Compound name | Molecular weight | Area % | Molecular formula | Cas # |
|---|---|---|---|---|---|
| 4.26 | 10-Heptadecen-8-ynoic acid, methyl ester, (E)- | 278 | 3.39 | $C_{18}H_{30}O_2$ | 16714-85-5 |
| 4.44 | (S)-(-)-2-Amino-3-phenyl-1-propanol | 151 | 1.61 | $C_9H_{13}NO$ | 3182-95-4 |
| 4.54 | Ethyl aminomethylformimidate | 102 | 5.94 | $C_4H_{10}N_2O$ | NA |
| 4.71 | 1-ISOPROPENYLTRICYCLO [3.1.0.0(2,6)]HEXANE | 120 | 8.62 | $C_9H_{12}$ | 126978-74-3 |
| 4.96 | CYCLOHEXANE, 1,2,4-TRIS(METHYLENE)- | 120 | 0.31 | $C_9H_{12}$ | 14296-81-2 |
| 5.44 | 1-PROPANONE,2-DIAZO-1-PHENYL- | 160 | 4.98 | $C_9H_8N_2O$ | 25451-15-4 |
| 6.11 | 10,12-Octadecadiynoic acid | 276 | 0.52 | $C_{18}H_{28}O_2$ | 7333-25-7 |
| 7.50 | Diallyl disulphide | 146 | 32.19 | $C_6H_{10}S_2$ | 2179-57-9 |
| 8.88 | Trisulfide, methyl 2-propenyl | 152 | 2.50 | $C_4H_8S_3$ | 34135-85-8 |
| 9.47 | Benzoic acid, 4-(1,1-dimethyl ethoxy)- | 194 | 0.56 | $C_{11}H_{14}O_3$ | 13205-47-5 |
| 10.35 | BENZENE, 1-METHOXY-4-(2-ROPENYL)- | 148 | 2.39 | $C_{10}H_{12}O$ | 140-67-0 |
| 10.76 | ALLICIN | 162 | 1.38 | $C_6H_{10}OS_2$ | 539-86-6 |
| 12.57 | Trisulfide, di-2-propenyl | 178 | 20.17 | $C_6H_{10}S_3$ | 2050-87-5 |
| 14.43 | 2-AMINOETHANETHIOL HYDROGEN SULFATE (ESTER) | 157 | 0.47 | $C_2H_7NO_3S_2$ | 2937-53-3 |
| 16.37 | 2-AMINOETHANETHIOL HYDROGEN SULFATE (ESTER) | 157 | 0.28 | $C_2H_7NO_3S_2$ | 2937-53-3 |
| 18.76 | 2-Methyl-E,E-3,13-octadecadien-1-ol | 280 | 1.08 | $C_{19}H_{36}O$ | NA |
| 19.52 | 9-OCTADECENOIC ACID (Z)- | 282 | 0.40 | $C_{18}H_{34}O_2$ | 112-80-1 |
| 20.20 | 9-OCTADECENOIC ACID (Z)- | 282 | 1.33 | $C_{18}H_{34}O_2$ | 112-80-1 |
| 21.47 | 2-Methyl-E,E-3,13-octadecadien-1-ol | 280 | 3.95 | $C_{19}H_{36}O$ | NA |
| 24.48 | 9-OCTADECENOIC ACID | 282 | 1.46 | $C_{18}H_{34}O_2$ | NA |
| 26.08 | 9-OCTADECENOIC ACID | 282 | 1.26 | $C_{18}H_{34}O_2$ | NA |
| 27.28 | 9-OCTADECENOIC ACID (Z)- | 282 | 1.39 | $C_{18}H_{34}O_2$ | 112-80-1 |
| 27.68 | 9-OCTADECENOIC ACID (Z)- | 282 | 0.13 | $C_{18}H_{34}O_2$ | 112-80-1 |
| 28.73 | 9-OCTADECENOIC ACID (Z)- | 282 | 3.66 | $C_{18}H_{34}O_2$ | 112-80-1 |

Supplementary Table (7 ): GC-MS study of ginger (*Zingiber officinale*) extracts discovered phyto-components.

| Retention time (min) R.T. | Compound Name | Molecular Weight | Area % | Molecular Formula | Cas # |
|---|---|---|---|---|---|
| 6.23 | BICYCLO[4.1.0]HEPT-3-ENE, 3,7,7-TRIMETHYL- | 136 | 0.88 | C10H16 | 13466-78-9 |
| 6.36 | Eucalyptol | 154 | 1.55 | C10H18O | 470-82-6 |
| 13.97 | .alfa.-Copaene | 204 | 0.97 | C15H24 | NA |
| 15.68 | Caryophyllene | 204 | 0.99 | C15H24 | 87-44-5 |
| 15.79 | Aromandendrene | 204 | 0.84 | C15H24 | 489-39-4 |
| 16.34 | Benzene, 1-(1,5-dimethyl-4-hexenyl)-4-methyl- | 202 | 7.72 | C15H22 | 644-30-4 |
| 16.59 | Zingiberene (1,3-cyclohexadiene,5-(1,5-dimethyl -4- hexenyl)-2-methyl -, [S-(R*,S*)]- | 204 | 52.79 | C15H24 | 495-60-3 |
| 16.81 | á-Bisabolene | 204 | 12.57 | C15H24 | 495-61-4 |
| 17.17 | á-SESQUIPHELLANDRENE | 204 | 20.15 | C15H24 | 20307-83-9 |
| 36.00 | Hexadecanoic acid, 1-(hydroxymethyl)-1,2-ethanediyl ester | 568 | 0.78 | C35H68O5 | 761-35-3 |
| 36.16 | Hexadecanoic acid, 1-(hydroxymethyl)-1,2-ethanediyl ester | 568 | 0.76 | C35H68O5 | 761-35-3 |

**Supplementary Table (8 )**: Phyto-components of chamomile (*Matricaria chamomilla*) extracts identified by GC-MS.

| Retention time (min) R.T. | Compound Name | Molecular Weight | Area % | Molecular Formula | Cas # |
|---|---|---|---|---|---|
| 4.49 | Ethanol, 2-butoxy- | 118 | 4.68 | C6H14O2 | 111-76-2 |
| 5.15 | Benzene, 1-ethyl-3-methyl- | 120 | 1.85 | C9H12 | 620-14-4 |
| 5.78 | Benzene, 1-ethyl-3-methyl- | 120 | 1.50 | C9H12 | 620-14-4 |
| 6.34 | 10,13-Octadecadiynoic acid, methyl ester | 290 | 0.69 | C19H30O2 | 18202-24-9 |
| 7.02 | 1-Decen-4-yne, 2-nitro- | 181 | 0.57 | C10H15NO2 | 80255-22-7 |
| 7.67 | Limonen-6-ol, pivalate | 236 | 0.57 | C15H24O2 | NA |
| 8.62 | Cyclopentasiloxane, decamethyl- | 370 | 5.81 | C10H30O5Si5 | 541-02-6 |
| 9.33 | Succinic acid, 4-methoxy-2-methylbutyl octadecyl ester | 470 | 0.56 | C28H54O5 | NA |
| 9.73 | 3-OCTANOL | 130 | 0.62 | C8H18O | 589-98-0 |
| 15.69 | cis-á-Farnesene | 204 | 29.51 | C15H24 | 28973-97-9 |
| 16.33 | á-ylangene | 204 | 1.17 | C15H24 | NA |
| 18.62 | 1H-Cycloprop[e]azulen-7-ol, decahydro-1,1,7-trimethyl-4-methylene-, [1ar-(1aà,4aà,7á,7aá,7bà)]- | 220 | 1.02 | C15H24O | 6750-60-3 |
| 19.95 | Bisabolol oxide B | 238 | 4.27 | C15H26O2 | NA |
| 20.45 | Bisabolol oxide | 236 | 2.29 | C15H24O2 | 58985-73-2 |
| 21.85 | Bisabolol oxide B | 238 | 34.75 | C15H26O2 | NA |
| 23.84 | Oxiranepentanoic acid, 3-undecyl-,methyl ester, cis- | 312 | 1.09 | C19H36O3 | 1041-25-4 |
| 24.27 | 1,6-Dioxaspiro[4.4]non-3-ene,2-(2,4-hexadiynylidene)- | 200 | 4.83 | C13H12O2 | 16863-61-9 |
| 27.30 | 9-Octadecenoic acid (Z)- | 282 | 2.18 | C18H34O2 | 112-80-1 |
| 28.76 | 9-Octadecenoic acid (Z)- | 282 | 1.32 | C18H34O2 | 112-80-1 |
| 32.87 | Hexadecanoic acid,2,3-hydroxypropyl ester | 330 | 0.73 | C19H38O4 | 542-44-9 |

**Supplementary Table (9)**: Phyto-components of cinnamon (*Cinnamomum cassia*) extracts identified by GC-MS.

| Retention time (min) R.T. | Compound Name | Molecular Weight | Area % | Molecular Formula | Cas # |
|---|---|---|---|---|---|
| 4.58 | Ethanol, 2-butoxy- | 118 | 1.16 | C6H14O2 | 111-76-2 |
| 5.08 | Benzene, 1-ethyl-3-methyl- | 120 | 0.68 | C9H12 | 620-14-4 |
| 12.42 | Cinnamaldehyde, (E)- | 132 | 13.37 | C9H8O | 14371-10-9 |
| 13.79 | à-ylangene | 204 | 0.40 | C15H24 | NA |
| 14.00 | .alfa.-Copaene | 204 | 42.00 | C15H24 | NA |
| 14.44 | á-Longipinene | 204 | 1.55 | C15H24 | 41432-70-6 |
| 14.82 | CINNAMALDEHYDE DIMETHYL ACETAL | 178 | 8.31 | C11H14O2 | NA |
| 15.75 | á-Longipinene | 204 | 0.74 | C15H24 | 41432-70-6 |
| 16.19 | ç-Muurolene | 204 | 3.27 | C15H24 | 30021-74-0 |
| 16.69 | à-Muurolene | 204 | 10.74 | C15H24 | 31983-22-9 |
| 17.16 | Naphthalene, 1,2,3,5,6,8a-hexahydro-4,7-dimethyl-1-(1-methylethyl)-, (1S-cis)- | 204 | 16.55 | C15H24 | 483-76-1 |
| 17.43 | .alfa.-Copaene | 204 | 0.51 | C15H24 | NA |
| 19.85 | à-Cadino | 222 | 0.70 | C15H26O | 481-34-5 |

**supplementary Table (10):** Findings from statistical tests of the treated cells' cell viability rate

| Statistical measurements | DMSO | NT | Plants extracts | | | |
|---|---|---|---|---|---|---|
| | | | Ginger | Garlic | Cinnamon | Chamomile |
| Mean absorbance | 295000 | 330000 | 17000 | 95000 | 270000 | 285000 |
| STD | 21213.20 | 14142.14 | 7071.07 | 7071.07 | 14142.14 | 14142.14 |
| ***P values*** | 0.192 | | 0.008* | 0.002* | 0.051 | 0.057 |

* Significance at *p*-value < 0.05

**supplementary Table (11):** Findings from statistical tests of LDH rate of treated cells

| Measurements | DMSO | NT | Triton 100-X | Plants extracts | | | |
|---|---|---|---|---|---|---|---|
| | | | | Ginger | Garlic | Cinnamon | Chamomile |
| Mean absorbance | 0.0530 | 0.0488 | 0.2900 | 0.2250 | 0.2750 | 0.0675 | 0.0545 |
| STD | 0.00 | 0.01 | 0.08 | 0.10 | 0.05 | 0.02 | 0.02 |
| Relative cytotoxicity | 1.09 | 1.00 | 5.95 | 4.62 | 5.64 | 1.38 | 1.12 |
| ***P values*** | 0.3988 | | 0.0007* | 0.0164* | 0.0001* | 0.0728 | 0.5834 |

* Significance at *p*-value < 0.05

**Supplementary Table (12a):** plants extract treated Caco-2 cells effects of Beclin1gene

| **treatments** / genes | GAPDH | Beclin-1 | **Mean** | **STD** | ***P values*** |
|---|---|---|---|---|---|
| **NT** | 1.000 | 1.000 | **1.000** | **0.000** | **-** |
| **DMSO** | 1.358 | 1.028 | 1.207 | 0.252 | **0.366** |
| **Garlic** | 0.608 | 0.607 | 0.608 | 0.001 | **0.000**** |
| ginger | 0.378 | 0.395 | 0.386 | 0.012 | **0.000**** |
| **Cinnamon** | 1.079 | 1.656 | 1.368 | 0.408 | 0.330 |
| chamomile | 2.083 | 1.512 | 1.798 | 0.404 | 0.108 |

*Significance at *p* value < 0.05 **: Indicates significant P value ≤0.01 with a high level of significance.

**Supplementary Table (12b):** plants extract treated Caco-2 cells effects of Atg5 gene.

| **treatments** / genes | GAPDH | Atg5 | **Mean** | **STD** | ***P Values*** |
|---|---|---|---|---|---|
| **NT** | 1.000 | 1.000 | **1.00** | **0.00** | **-** |
| **DMSO** | 1.168 | 2.085 | 1.626 | 0.648 | 0.305 |
| **Garlic** | 0.140 | 0.397 | 0.269 | 0.182 | 0.029* |
| ginger | 0.118 | 0.219 | 0.168 | 0.072 | 0.003** |
| **Cinnamon** | 2.219 | 1.057 | 1.638 | 0.822 | 0.386 |
| chamomile | 1.564 | 2.183 | 1.873 | 0.438 | 0.106 |

*Significance at *p* value < 0.05 **: Indicates significant P value ≤0.01 with a high level of significance.

**Supplementary Table (12c):** plants extract treated Caco-2 cells effects of PTEN gene

| **treatments** / genes | GAPDH | PTEN | **Mean** | **STD** | ***P Values*** |
|---|---|---|---|---|---|
| **NT** | 1.000 | 1.000 | **1.00** | **0.00** | **-** |
| **DMSO** | 0.943 | 0.544 | 0.744 | 0.282 | 0.328 |
| **Garlic** | 5.523 | 6.452 | 5.988 | 0.657 | 0.008** |
| ginger | 4.703 | 5.894 | 5.298 | 0.842 | 0.018* |
| **Cinnamon** | 0.426 | 0.482 | 0.454 | 0.040 | 0.002** |
| chamomile | 1.275 | 0.867 | 1.071 | 0.288 | 0.760 |

*Significance at *p* value < 0.05 **: Indicates significant P value ≤0.01 with a high level of significance.

**Supplementary Table (12d):** plants extract treated Caco-2 cells effects of caspase3 gene.

| **treatments** / genes | GAPDH | Casp 3 | **Mean** | **STD** | ***P Values*** |
|---|---|---|---|---|---|
| **NT** | 1.000 | 1.000 | **1.00** | **0.00** | **-** |
| **DMSO** | 1.256 | 1.052 | 1.154 | 0.144 | 0.269 |
| **Garlic** | 3.955 | 4.765 | 4.360 | 0.572 | 0.016* |
| ginger | 3.886 | 5.325 | 4.603 | 1.018 | 0.794 |
| **Cinnamon** | 0.289 | 0.206 | 0.248 | 0.059 | 0.003** |
| chamomile | 0.262 | 0.646 | 0.454 | 0.271 | 0.104 |

*Significance at *p* value < 0.05 **: Indicates significant P value ≤0.01 with a high level of significance.