**Supplementary Tables**

**Tables**

**Table S1**: **List of genes used in the study and their cycling parameters**

|  |  |  |
| --- | --- | --- |
| **Gene** | **PCR Programme** | **Reference** |
| **β-actin**  F‘5AGCCGTGGCCATCTCTTGCTCGAAG3’  R‘5 GCCATGTACGTTGCTATCCAGGCTG 3’ | 940C-4 min, 34 cycles of 940C-30 sec,  650C-30 sec and 720C-1min and final  extension at 720C-10 min  **Product Size**- 300 bp | [25] |
| **Caspase-9**  F‘5TGTCCTACTCTACTTTCCCAGGTTTT3’  R-‘5GTGAGCCCACTGCTCAAAGAT 3’ | 950C-5 min, 40 cycles of 950C -45 sec, 600C-1min and 720C-1min and final extension at 720C-10 min  **Product Size**- 101 bp | [26] |
| **Caspase-3**  F‘5CAGTGGAGGCCGACTTCTTG3’ R‘5TGGCACAAAGCGACTGGAT3’ | 950C-5 min, 40 cycles of 950C-45 sec, 600C-1min and 720C-1min and final extension at 720C -10 min  **Product Size**- 102 bp | [26] |
| **Bax**  F ‘5TCCACCAAGAAGCTGAGCGA3’  R‘ 5 GTCCAGCCCATGATGGTTCT3’ | 950C-5 min, 40 cycles of 950C-45 sec,  650C-1min and 720C-1min and final  extension at 720C-10 mins  **Product Size**- 257 bp | [27] |
| **Bcl-2**  F-5'GTGGAGGAGCTCTTCAGGGA3'  R- 5'AGGCACCCAGGGTGATGCAA3' | 930C-2min, 40 cycles of 920C-30 sec,  550C-40 sec and 720C-30 sec and final extension at 720C-10 min.  **Product Size**- 304 bp | [28] |
| **p16**  F-‘5ATCTGATCTCCATCGCAGGG3’  R- ‘5AAACTGTGCTCCTCCCCTAC3’ | 930C-3min, 38 cycles of 930C-30 sec,  590C-45 sec and 720C- 60 sec and final extension at 720C-10 min.  **Product Size**  236 bp | Primer 3  software |
| **p21**  F-‘5GTTCTACCTCAGGCAGCTCA3’  R-‘5AATGAACTGGGGAGGGATGG3’ | 930C-3min, 38 cycles of 930C-30 sec,  590C-45 sec and 720C- 60 sec and final extension at 720C-10 min.  **Product Size**  208 bp | Primer 3  software |
| **p27**  F-‘5GCAAGTACGAGTGGCAAGAG3’  R-‘5GTCGCTTCCTTATTCCTGCG3’ | 930C-3min, 38 cycles of 930C-30 sec, 560C-45 sec and 720C- 60 sec and final extension at 720C-10 min.  **Product Size**  249 bp | Primer 3 software |

**Table S2: GC-MS Spectra of AAA extract.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Compound name** | **Retention time  (Minutes)** | **% Peak Area** | **Molecular Weight** |
| Benzyl Benzoate | 17.84 | 6.36 | C14H12O2 |
| Benzoic acid, 2-phenylhydrazide | 18.72 | 3.26 | C13H12N2O |
| 2,2,4-Trimethyl3-(3,8,12,16tetramethylheptadeca-3,7,11,15-tetraenyl)-cyclohexanol | 23.64 | 13.17 | C30H52O |
| Glycine,  N-[(3à,5á,7à,12à)-24-oxo-3,7,12-tris-[(trimethylsilyl)-oxy]-cholan-2-4-yl], methyl ester | 24.10 | 3.60 | C36H69NO6Si3 |
| Cyclodecasiloxane, eicosamethylOctasiloxane, | 25.72 | 3.05 | C20H60O10Si10 |
| [5-(3Methoxymethoxy-10,13-dimethyl 2,3,4,9,10,11,12,13,14,15,  16,17-dodecahydro-1-Hcyclopenta[a]phenanthren-17-yl)  Hex-1-ynyl]-trime | 25.86 | 4.54 | C30H48O2Si |
| Astaxanthin | 26.10 | 3.30 | C40H52O4 |
| 4H-Cyclopropa[5',6']-benz[1',2':7,8]azuleno[5,6]oxiren-4-one,8,8abis( acetyloxy)-2a[(acetyloxy)methyl]-1,1a,  1b,1c,2a,3,3a,6a, 6b,7,8,8-adodecahydro6bhydroxy-3-amethoxy-1,1,5,7-tetramethy  l-,[1aR(  1aà,1bá,1cá,2aá,3aà,6aà,6bà,7à,8á,8aà) | 31.36 | 5.72 | C27H36O10 |
| Lup-20-(29)-en-3-one | 32.47 | 26.43 | C30H48O |
| 9,19-Cyclolanostan-3-ol,-24,24-epoxymethano,  Acetate | 34.00 | 30.56 | C33H54O3 |

**Supplementary Figure**

**Figure S1:** Dose and time dependent effect by AA extracts on viability of COLO-205 cells. (A) EAA and (B) AAA. Data presented as mean ± S.D (n=3) and compared as percent viability of control untreated cells vs. EAA or AAA treated cells. \*p< 0.05 \*\*p<0.01

**Figure S2:** AA treatment of COLO 205 cells leads to apoptotic changes as assessed by AO/EB staining. (A) Control, (C) EAA and (E) AAA observed for uptake of Acridine Orange dye and (B) Control, (D) EAA and (F) AAA observed for uptake of Ethidium Bromide (magnification 200X).

**Figure S3:** Evidence of apoptosis induction in AA treated COLO-205 cells by Annexin V/PI staining. (A) Control, (C) EAA and (E) AAA , observed for Annexin V staining and (B) Control, (D) EAA and (F) AAA for PI staining.

**Figure S4:**

β-glucosidase pre-treatment of AAA leads to enhanced cytotoxicity in treated COLO-205 cells. Data presented as mean ± S.D (n=3). A comparison was made between the treatments for each dose selected. \*P<0.05, \*\*P<0.01, \*\*\*P<0.001.

**Figure S5:**

Gas chromatography –Mass Spectrophotometric spectra of AAA extract.

**FIGURES**

**1SA.tif**

**1SB.tif**

**2S.tif**

**3S.tif**

**4S.tif**

**5S.tif**