**Supplementary Figure Legends**

**Fig. S1:** Effect of varying concentration of glutamate on HT-22 cells (Significance at *p < 0.05*; \* Control vs Glutamate treated; n=3).

**Fig. S2:** Confocal microscopic images representing inhibition of ROS by HS extract **(A)** Control **(B)** Glutamate (5 mM) **(C)** HS-5 + glutamate **(D)** HS-10 + glutamate **(E)** HS-10

**Fig. S3:** Mechanism of action of HS extract to attenuate glutamate-induced toxicity in HT-22 cells.



**Fig. S1**

****

**Fig. S2**

**Fig. S3**

**Table S1. List of genes and sequences of primers used for Real-Time PCR analysis.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl. No.** | **Gene Name** | **Forward Primer** | **Reverse Primer** |
| 1 | *GLT-1* | TCTGAGGAGGCCAATACCAC | AACTCCAGGCCCTTCTTGAT |
| 2 | *Nrf-2* | GTGCTCCTATGCGTGAATCC | GCGGCTTGAATGTTTGTCTT |
| 3 | *NQO-1* | GTTTCTGTGGCTTCCAGGTC | CGTTTCTTCCATCCTTCCAG |
| 4 | *HO-1* | TGCTCGAATGAACACTCTGG | TCCTCTGTCAGCATCACCTG |
| 5 | *Cyp-D* | CTCATCTGGACGGGAAACAT | CCAGTCATCCCCTTCTTTCA |
| 6 | *Calpain-1* | CTGGAGGCTGCAGGAACTAC | CTCCCGGTTGTCATAGTCGT |
| 7 | *Grp-78* | TGCAGCAGGACATCAAGTTC | TTTCTTCTGGGGCAAATGTC |
| 8 | *GSK-3β* | CAGTGGTGTGGATCAGTTGG | ATGTGCACAAGCTTCCAGTG |
| 9 | *Beclin-1* | GGCCAATAAGATGGGTCTGA | GCTGCACACAGTCCAGAAAA |
| 10 | *ATG-5* | AGATGGACAGCTGCACACAC | GCTGGGGGACAATGCTAATA |
| 11 | *ATG-7* | TCCGTTGAAGTCCTCTGCTT | CCACTGAGGTTCACCATCCT |
| 12 | *GAPDH* | TCAACGGCACAGTCAAGG | ACTCCACGACATACTCAGC |
| 13 | *daf-2* | TCGAGCTCTTCCTACGGTGT | CATCTTGTCCACCACGTGTC |
| 14 | *egl-8* | CGTATCGTTGCGCTTCTCA | AGTAGTGACACAGCGGTTG |
| 15 | *egl-30* | TCAGAAAGGCGGAAGTGGAT | GGTTCTCGTTGTCACACTCG |
| 16 | *dgk-1* | GTTGGGGAAGTGGTGCAAAT | GCGAGCTTGGATTGGATGAG |
| 17 | *goa-1* | TGTTCGATGTGGGAGGTCAA | TCGTGCATTCGGTTTGTTGT |
| 18 | *skn-1* | ATCCATTCGGTAGAGGACCA | GGCGCTACTGTCGATTTCTC |
| 19 | *act-2* | ATCGTCCTCGACTCTGGAGATG | TCACGTCCAGCCAAGTCAAG |

**Table S2. List of compounds in ethanol extract of HS identified by GC-MS analysis.**

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Name of the compound** | **Retention time (min)** |
| 1 | Furfural | 2.662 |
| 2 | 2-Furancarboxaldehyde, 5-methyl-  (5-Methylfurfural) | 3.958 |
| 3 | Pentanoic acid, 4-oxo-, ethyl ester  (Ethyl levulinate) | 5.144 |
| 4 | 2-Furaldehyde diethyl acetal  (2-(diethoxymethyl) furan) | 5.380 |
| 5 | Butanedioic acid, diethyl ester | 6.750 |
| 6 | Cyclopentanecarboxylic acid, 2-oxo-, ethyl ester | 6.870 |
| 7 | 1H-Pyrazole-3-carboxylic acid, 2,5-dihydro-5-oxo- | 7.201 |
| 8 | 5-Hydroxymethylfurfural | 7.391 |
| 9 | Bicyclo[2.2.2]octane-1-carboxylic acid | 7.431 |
| 10 | Butanedioic acid, hydroxy-, diethyl ester, (.+/-.)- | 7.958 |
| 11 | 2-Pyrrolidinecarboxylic acid-5-oxo-, ethyl ester | 10.247 |
| 12 | Phenol, 2,4-bis(1,1-dimethylethyl)-  (2,4-Di-tert-butylphenol) | 11.127 |
| 13 | Triethyl citrate | 12.877 |
| 14 | 6-Hydroxycyclohepta(b)pyridin-7-one | 13.058 |
| 15 | Butanedioic acid, 3-hydroxy-2,2-dimethyl-, diethyl ester | 13.309 |
| 16 | n-Hexadecanoic acid  (Palmitic acid) | 15.957 |
| 17 | Hexadecanoic acid, ethyl ester  (Ethyl palmitate) | 16.316 |
| 18 | Linoleic acid ethyl ester  (Ethyl linoleate) | 18.185 |
| 19 | 9-Octadecenamide, (Z)-  (Oleamide) | 20.199 |

**Table S3. Prediction of BBB of compounds using SwissADME**

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Name of the compound** | **BBB permeant** |
| 1 | Furfural | Yes |
| 2 | 5-Methylfurfural | Yes |
| 3 | Ethyl levulinate | Yes |
| 4 | 2-(diethoxymethyl) furan | Yes |
| 5 | Diethyl succinate | Yes |
| 6 | Cyclopentanecarboxylic acid, 2-oxo-, ethyl ester | Yes |
| 7 | 1H-Pyrazole-3-carboxylic acid, 2,5-dihydro-5-oxo- | No |
| 8 | 5-Hydroxymethylfurfural | No |
| 9 | Bicyclo[2.2.2]octane-1-carboxylic acid | Yes |
| 10 | Butanedioic acid, hydroxy-, diethyl ester, (.+/-.)- | No |
| 11 | 2-Pyrrolidinecarboxylic acid-5-oxo-, ethyl ester | No |
| 12 | 2,4-Di-tert-butylphenol | Yes |
| 13 | Triethyl citrate | No |
| 14 | 6-Hydroxycyclohepta(b)pyridin-7-one | No |
| 15 | Butanedioic acid, 3-hydroxy-2,2-dimethyl-, diethyl ester | No |
| 16 | Palmitic acid | Yes |
| 17 | Ethyl palmitate | No |
| 18 | Ethyl linoleate | No |
| 19 | Oleamide | Yes |