

# C GALLIC-ACID

## Chemid

GALLICACID

\*Unless otherwise noted all references are to Duke, James A. 1992. Handbook of phytochemical constituents of GRAS herbs and other economic plants. Boca Raton, FL. CRC Press.

| Plant                | Part                | Low PPM | High PPM | StdDev | Reference   |
|----------------------|---------------------|---------|----------|--------|---|
| Abrus precatorius    | Seed                | --      | --       |        | List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.  |
| Acacia catechu       | Plant               | --      | --       |        | --  |
| Acacia decurrens     | Plant               | --      | --       |        | --  |
| Acacia farnesiana    | Plant               | --      | --       |        | --  |
| Acacia farnesiana    | Flower              | --      | --       |        | Wealth of India.  |
| Acacia nilotica      | Resin, Exudate, Sap | --      | --       |        | --  |
| Acacia tortilis      | Plant               | --      | --       |        | --  |
| Achillea millefolium | Plant               | --      | --       |        | Tunon, H., Thorsell, W., and Bohlin, L. 1993. Mosquito Repelling Activity of Compounds Occurring in Achillea millefolium L. (Asteraceae). Economic Botany 48(2): 111-120, 1994. |
| Actaea racemosa      | Plant               | --      | --       |        | Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.   |
| Ailanthus altissima  | Plant               | --      | --       |        | --  |

| Plant                    | Part          | Low PPM | High PPM | StdDev              | Reference   |
|--------------------------|---------------|---------|----------|---------------------|---|
| Anacardium occidentale   | Seed          | --      | --       |                     | --  |
| Anogeissus latifolia     | Plant         | --      | --       |                     | --  |
| Arbutus unedo            | Leaf          | --      | --       |                     | --  |
| Arctostaphylos uva-ursi  | Plant         | --      | --       |                     | --  |
| Arctostaphylos uva-ursi  | Leaf          | --      | --       |                     | --  |
| Areca catechu            | Seed          | --      | --       |                     | --  |
| Arnica montana           | Flower        | --      | --       |                     | --  |
| Artemisia dracunculus    | Plant         | --      | --       |                     | Stitt, Paul. Why George should eat broccoli.  |
| Aspalathus linearis      | Shoot         | --      | 44000    | 1.4140081297693825  | --  |
| Aspalathus linearis      | Leaf          | --      | 44000    | 0.6988544721314695  | --  |
| Ballota nigra            | Plant         | --      | --       |                     | --  |
| Caesalpinia pulcherrima  | Leaf          | --      | --       |                     | --  |
| Camellia sinensis        | Leaf          | --      | 3500     | -0.7468561442003636 | --  |
| Camptotheca acuminata    | Leaf          | --      | --       |                     | --  |
| Castanea sativa          | Leaf          | --      | --       |                     | --  |
| Ceratonia siliqua        | Fruit         | --      | --       |                     | --  |
| Chamaesyce hypericifolia | Latex Exudate | --      | --       |                     | --  |
| Cimicifuga racemosa      | Plant         | --      | --       |                     | Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp. |
| Conyza canadensis        | Leaf          | --      | --       |                     | --  |

| Plant                   | Part   | Low PPM | High PPM | StdDev | Reference   |
|-------------------------|--------|---------|----------|--------|---|
| Coriaria myrtifolia     | Leaf   | --      | --       |        | --  |
| Coriaria thymifolia     | Plant  | --      | --       |        | --  |
| Cornus florida          | Bark   | --      | --       |        | --  |
| Cornus mas              | Flower | --      | --       |        | Delaveau, P., Paris, R. R. 1961. Concerning the Presence of Rutoside and Gallic Derivatives from the Flowers of Cornus mas and Preliminary Research with C. sanguinea. Bull Soc Chim Biol, 43: 661-666. |
| Cornus mas              | Leaf   | --      | --       |        | Delaveau, P., Paris, R. R. 1961. Concerning the Presence of Rutoside and Gallic Derivatives from the Flowers of Cornus mas and Preliminary Research with C. sanguinea. Bull Soc Chim Biol, 43: 661-666. |
| Cornus officinalis      | Fruit  | --      | --       |        | --  |
| Corylus americana       | Seed   | --      | --       |        | Senter, S. D., Horvat, R. J., Forbus, W. R. 1983. Comparative GLC-MS Analysis of Phenolic Acids of Selected Tree Nuts. J. Food Science, 48(3): 798-799.   |
| Cyamopsis tetragonoloba | Seed   | --      | --       |        | Kaushal, G. P., Bhatia, I. S. 1982. A Study of Polyphenols in the Seeds and Leaves of Guar (Cyamopsis tetragonoloba L. Taub). J Sci Food Agr, 33: 461-470.  |
| Cyamopsis tetragonoloba | Fruit  | --      | --       |        | Bajaj, K. L., Rani, M., Arora, Y. K. 1978. Polyphenols and Lignins of Mature Guar Pods (Cyamopsis tetragonoloba). Plant Biochem J, 5: 140-145.  |
| Cypripedium pubescens   | Root   | --      | --       |        | --  |
| Digitalis purpurea      | Leaf   | --      | --       |        | --  |
| Ephedra gerardiana      | Plant  | --      | --       |        | --  |
| Ephedra sinica          | Plant  | --      | --       |        | List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.  |
| Equisetum arvense       | Plant  | --      | --       |        | J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.  |

| <b>Plant</b>           | <b>Part</b> | <b>Low PPM</b> | <b>High PPM</b> | <b>StdDev</b>       | <b>Reference</b>           |
|------------------------|-------------|----------------|-----------------|---------------------|----------------------------|
| Eucalyptus globulus    | Bark        | --             | --              |                     | --                         |
| Eucalyptus globulus    | Leaf        | --             | --              |                     | --                         |
| Eucalyptus globulus    | Stem        | --             | --              |                     | --                         |
| Eupatorium perfoliatum | Plant       | --             | --              |                     | --                         |
| Euphorbia hirta        | Plant       | --             | --              |                     | --                         |
| Euphrasia officinalis  | Shoot       | --             | --              |                     | Jim Duke's personal files. |
| Euphrasia officinalis  | Plant       | --             | --              |                     | --                         |
| Fragaria spp           | Fruit       | 80             | 121             | -1.0679444233170081 | Jim Duke's personal files. |
| Gaultheria procumbens  | Plant       | --             | --              |                     | --                         |
| Geranium maculatum     | Root        | --             | --              |                     | --                         |
| Geranium thunbergii    | Leaf        | --             | --              |                     | --                         |
| Glycine max            | Leaf        | 0.1            | 2.9             | -0.8716905786787352 | --                         |
| Hamamelis virginiana   | Leaf        | 54400          | 54400           | 1.070098679782113   | --                         |
| Hypericum perforatum   | Plant       | --             | --              |                     | --                         |
| Juglans nigra          | Seed        | --             | --              |                     | --                         |
| Juglans regia          | Fruit       | --             | --              |                     | --                         |
| Juniperus communis     | Leaf        | --             | --              |                     | --                         |
| Juniperus sabina       | Plant       | --             | --              |                     | --                         |
| Lagerstroemia indica   | Flower      | --             | --              |                     | --                         |

| Plant                 | Part     | Low PPM | High PPM | StdDev             | Reference   |
|-----------------------|----------|---------|----------|--------------------|---|
| Lawsonia inermis      | Leaf     | --      | 69000    | 1.5912684328301319 | --  |
| Lycopus virginicus    | Plant    | --      | --       |                    | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.  |
| Malus domestica       | Fruit    | --      | --       |                    | --  |
| Malus domestica       | Pericarp | --      | --       |                    | --  |
| Mangifera indica      | Flower   | 90000   | 90000    |                    | --  |
| Marrubium vulgare     | Plant    | --      | --       |                    | --  |
| Marrubium vulgare     | Flower   | --      | --       |                    | --  |
| Melaleuca leucadendra | Plant    | --      | --       |                    | --  |
| Melilotus officinalis | Shoot    | --      | --       |                    | --  |
| Mucuna pruriens       | Seed     | --      | --       |                    | --  |
| Myrica cerifera       | Plant    | --      | --       |                    | Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.   |
| Myrtus communis       | Plant    | --      | --       |                    | List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.  |
| Oenothera biennis     | Leaf     | --      | --       |                    | --  |
| Oenothera biennis     | Plant    | --      | --       |                    | --  |
| Olea europaea         | Fruit    | --      | --       |                    | --  |
| Ononis spinosa        | Root     | --      | --       |                    | Blaschek, W., Hansel, R., Keller, K., Reichling, J., Rimpler, H., and Schneider, G. eds. 1998. Hager's Handbuch der Pharmazeutischen Praxis, Auflage Band 2 (A-K), 909 pp., (L-Z), 858 pp. Springer-Verlag, Berlin. |

| Plant                     | Part       | Low PPM | High PPM | StdDev              | Reference  |
|---------------------------|------------|---------|----------|---------------------|--|
| Origanum vulgare          | Leaf       | --      | --       |                     | --   |
| Paeonia lactiflora        | Root       | --      | --       |                     | List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979. |
| Phyllanthus amarus        | Shoot      | 864.8   | 865      | -0.6861292784290273 | --   |
| Phyllanthus emblica       | Fruit      | 50000   | 50000    | 1.434639526593213   | --   |
| Phyllanthus emblica       | Pericarp   | --      | 50000    | 1                   | --   |
| Phyllanthus emblica       | Shoot      | --      | --       |                     | --   |
| Podophyllum peltatum      | Plant      | --      | --       |                     | --   |
| Polygonum hydropiper      | Plant      | --      | --       |                     | --   |
| Polygonum hydropiperoides | Plant      | --      | --       |                     | --   |
| Polygonum multiflorum     | Tuber      | --      | --       |                     | --   |
| Populus nigra             | Plant      | --      | --       |                     | --   |
| Prunus cerasus            | Plant      | --      | --       |                     | --   |
| Prunus serotina           | Stem Bark  | --      | --       |                     | --   |
| Psidium guajava           | Fruit      | --      | --       |                     | --   |
| Psidium guajava           | Heart Wood | --      | --       |                     | --   |
| Psidium guajava           | Root       | --      | --       |                     | --   |
| Pterocarpus marsupium     | Wood       | --      | --       |                     | ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes. |
| Pterocarpus santalinus    | Wood       | --      | --       |                     | --   |

| Plant              | Part        | Low PPM | High PPM | StdDev             | Reference  |
|--------------------|-------------|---------|----------|--------------------|--|
| Punica granatum    | Pericarp    | 900     | 40000    | -1                 | --   |
| Punica granatum    | Fruit Juice | --      | --       |                    | --   |
| Quassia amara      | Root        | --      | --       |                    | --   |
| Quercus alba       | Bark        | --      | --       |                    | Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.  |
| Quercus infectoria | Fruit       | 20000   | 40000    | 0.9329085476421072 | --   |
| Quercus robur      | Bark        | --      | --       |                    | --   |
| Quercus rubra      | Wood        | --      | --       |                    | --   |
| Rheum officinale   | Root        | --      | --       |                    | Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.   |
| Rheum officinale   | Rhizome     | --      | 25.7     |                    | --   |
| Rheum palmatum     | Root        | --      | --       |                    | Chemical Constituents of Oriental Herbs (3 diff. books)  |
| Rheum rhabarbarum  | Pt          | 53      | 53       |                    | --   |
| Rheum rhabarbarum  | Root        | --      | --       |                    | --   |
| Rhus coriaria      | Leaf        | --      | --       |                    | Hansel, R., Keller, K., Rimpler, H., and Schneider, G. eds. 1992. Hager's Handbuch der Pharmazeutischen Praxis, Drogen (A-D), 1209 pp., 1993 (E-O), 970 pp., 1994 (P-Z), 1196 pp. Springer-Verlag, Berlin. |
| Rhynchosia minima  | Seed        | --      | --       |                    | --   |
| Ricinus communis   | Leaf        | --      | --       |                    | List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.   |
| Rosa canina        | Stem        | --      | --       |                    | --   |

| Plant               | Part           | Low PPM | High PPM | StdDev               | Reference   |
|---------------------|----------------|---------|----------|----------------------|---|
| Rosa canina         | Tissue Culture | --      | --       |                      | --  |
| Rosa centifolia     | Flower         | --      | --       |                      | --  |
| Rosa gallica        | Flower         | --      | --       |                      | --  |
| Rosa multiflora     | Fruit          | --      | --       |                      | --  |
| Rubus idaeus        | Leaf           | --      | --       |                      | --  |
| Rubus idaeus        | Plant          | --      | --       |                      | --  |
| Rubus idaeus        | Juice          | --      | --       |                      | Phenolic Compounds in Food and Their Effects on Health. Antioxidants & Cancer Prevention. Huang, M.T., Ho, C.T. and Lee, C.Y. eds. 1992. ACS Symposium Series 507.ACS, Washington 402 pp. |
| Salvia officinalis  | Plant          | --      | --       |                      | Stitt, Paul. Why George should eat broccoli.  |
| Sanguisorba minor   | Plant          | --      | --       |                      | --  |
| Schinus molle       | Bark           | --      | --       |                      | --  |
| Solanum tuberosum   | Root Bark      | --      | --       |                      | --  |
| Sorbus aucubaria    | Fruit          | --      | --       |                      | --  |
| Syzygium aromaticum | Flower         | --      | --       |                      | --  |
| Syzygium aromaticum | Fruit          | 285     | 12600    | -0.44183433468392297 | --  |
| Syzygium cumini     | Fruit          | --      | --       |                      | Morton, J.F., Major Medicinal Plants. 1977. Atlas of Medicinal Plants of Middle America. Bahamas to Yucatan. 1981.  |
| Tagetes lucida      | Leaf           | --      | --       |                      | Tramil  |
| Taxus baccata       | Leaf           | 0.001   | 0.3      | -0.871783389730648   | --  |



| Plant                | Part      | Low PPM | High PPM | StdDev              | Reference   |
|----------------------|-----------|---------|----------|---------------------|---|
| Terminalia arjuna    | Shoot     | --      | 7.5      | -0.7278788513403553 | Pettit, G. R., Hoard, M. S., Doubek, D. L., Schmidt, J. M., Pettit, R. K., Tackett, L. P., Chapuis, J. C. 1996. Antineoplastic Agents 338. The Cancer Cell Growth Inhibitory Constituents of Terminalia arjuna (Combretaceae). J. Ethnopharmacol. 53 1: 57-63.  |
| Terminalia arjuna    | Root Bark | --      | 3        |                     | Anjaneyulu, A. S. R., Rama Prasad, A. V. 1982. Chemical Examination of the Roots of Terminalia arjuna-The Structures of Arjunoside 3 and Arjunoside 4, Two New Triterpenoid Glycosides. Phytochemistry 21: 2057-2060.   |
| Terminalia arjuna    | Leaf      | --      | --       |                     | Kandil, F. E., Nassar, M. I. 1998. A Tannin Anti-Cancer Promotor from Terminalia arjuna. Phytochemistry 47 8: 1567-1568.  |
| Terminalia bellirica | Fruit     | --      | --       |                     | --  |
| Terminalia catappa   | Fruit     | --      | --       |                     | List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.  |
| Terminalia chebula   | Fruit     | --      | 4310     | -0.8577693162343898 | --  |
| Terminalia chebula   | Leaf      | --      | 53.3     | -0.8698914721339668 | Lin,T.C.,et al.1990.Tannins and Related Compounds.CII.Structures of Terchebulin, an Ellagitannin Having a Novel Tetraphenylcarboxylic Acid (Terchebolic Acid) and Biogenetically Related Tannins from Terminalia chebula Retz. Chem Pharm Bull 38 11:3004-3008. |
| Terminalia pallida   | Fruit     | --      | --       |                     | --  |
| Thymus vulgaris      | Plant     | --      | --       |                     | Stitt, Paul. Why George should eat broccoli.  |
| Tussilago farfara    | Flower    | --      | --       |                     | --  |
| Uncaria catechu      | Branches  | --      | --       |                     | --  |
| Urginea maritima     | Bulb      | --      | --       |                     | --  |
| Urtica dioica        | Plant     | --      | --       |                     | --  |

| <b>Plant</b>          | <b>Part</b>    | <b>Low<br/>PPM</b> | <b>High<br/>PPM</b> | <b>StdDev</b> | <b>Reference</b> |
|-----------------------|----------------|--------------------|---------------------|---------------|------------------|
| Vaccinium corymbosum  | Plant          | --                 | --                  |               | --               |
| Vaccinium myrtillus   | Leaf           | --                 | --                  |               | --               |
| Vaccinium myrtillus   | Fruit Juice    | --                 | --                  |               | --               |
| Vaccinium vitis-idaea | Leaf           | --                 | --                  |               | --               |
| Vitis vinifera        | Fruit          | --                 | --                  |               | --               |
| Vitis vinifera        | Root           | --                 | --                  |               | --               |
| Vitis vinifera        | Seed           | --                 | --                  |               | --               |
| Vitis vinifera        | Leaf           | --                 | --                  |               | --               |
| Zea mays              | Tissue Culture | --                 | --                  |               | --               |