

# A Surfactant

\*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	# Chemicals	Total PPM
<i>Abelmoschus esculentus</i> Okra	1	
<i>Achillea millefolium</i> Milfoil; Yarrow	1	2640.0
<i>Acinos suaveolens</i>	1	
<i>Acorus calamus</i> Calamus; Flagroot; Myrtle Flag; Sweetflag; Sweetroot; Sweet Calamus	2	200.0
<i>Allium cepa</i> Onion; Shallot	1	
<i>Aloysia citrodora</i> Lemon Verbena	1	840.0
<i>Alpinia officinarum</i> Lesser Galangal; Chinese Ginger	1	
<i>Alpinia galanga</i> Languas; Greater Galangal; Siamese Ginger	1	
<i>Amomum compactum</i> Java Cardamom; Chester Cardamom; Round Cardamom; Siam Cardamom	1	
<i>Angelica archangelica</i> Wild Parsnip; Angelica; Garden Angelica	1	
<i>Annona muricata</i> Soursop	1	
<i>Artemisia vulgaris</i> Mugwort	1	
<i>Artemisia salsoloides</i>	1	
<i>Artemisia pallens</i> Davana	1	
<i>Artemisia herba-alba</i> Desert Wormwood	1	
<i>Artemisia dracunculus</i> Tarragon	1	1000.0
<i>Artemisia cina</i> Levant Wormseed	1	48000.0
<i>Artemisia annua</i> Sweet Annie; Annual Mugwort (GRIN); Qinghao; Annual Wormwood (GRIN); Sweet Wormwood (GRIN)	1	13200.0
<i>Boronia megastigma</i> Scented Boronia	1	
<i>Brassica oleracea</i> var. <i>italica</i> Sprouting Broccoli; Heading Broccoli; Cape Broccoli; Asparagus Broccoli; Purple Cauliflower; Winter Broccoli; Broccoli; Calabrese	1	
<i>Brassica oleracea</i> var. <i>botrytis</i> l. Cauliflower	1	
<i>Calamintha nepeta</i> Turkish Calamint	1	
<i>Callicarpa americana</i> French Mulberry; Beauty Berry; American Beauty Berry	1	
<i>Capsicum frutescens</i> Tabasco; Spur Pepper; Red Chili; Cayenne; Chili; Hot Pepper	1	
<i>Carica papaya</i> Papaya	1	
<i>Carum carvi</i> Carum; Caraway; Kummel (Ger.); Comino (Sp.); Comino de prado (Sp.)	1	
<i>Chamaemelum nobile</i> Garden Camomile; Roman Camomile; Perennial Camomile	1	
<i>Chrysanthemum x morifolium</i> Mum; Ju Hua (Pinyin); Florist's Chrysanthemum; Chrysanthemum	2	
<i>Chrysanthemum parthenium</i> Feverfew	1	
<i>Chrysanthemum balsamita</i> Costmary; Balsamite	1	
<i>Cinnamomum verum</i> Ceylon Cinnamon; Cinnamon	1	1600.0
<i>Cinnamomum camphora</i> Camphor; Ho Leaf	1	6288.0
<i>Cinnamomum aromaticum</i> Zimt cassia (Ger.); Kasia-Keihi (Jap.); China Junk Cassia; Cannelier Casse (Fr.); Cassia Bark; Canelero chino (Sp.); Chinese Cassia; Chinesischer Zimtbaum (Ger.); Cassia Lignea; Canela de la China (Sp.); Chinazimt (Ger.); Canelle de Cochinchine (Fr.); Cannelier de Chine (Fr.); Cassia; Chinese Cinnamon; Saigon Cinnamon	1	
<i>Citrullus lanatus</i> Watermelon	1	
<i>Citrus sinensis</i> Orange	1	1800.0
<i>Citrus reticulata</i> Tangerine; Mandarin	2	518.0
<i>Citrus mitis</i> Calamondin; Calamansi	1	

Plant	# Chemicals	Total PPM
Citrus aurantium Petitgrain; Bitter Orange	1	
Citrus aurantiifolia Lime	1	140.0
Cleonia lusitanica Spanish Heal-All	1	
Coriandrum sativum Chinese Parsley; Coriander; Cilantro	1	
Crocus sativus Saffron	1	
Cucumis melo Netted Melon; Persian Melon; Melon; Muskmelon; Cantaloupe; Nutmeg Melon	1	
Cuminum cyminum Cumin	1	276.0
Cunila origanoides Maryland Dittany; Frost Flower; American Dittany; Mountain Dittany; Dittany; Frost Mint; Stone Mint	1	56.0
Curcuma zedoaria Shoti; Zedoary	1	3840.0
Curcuma longa Turmeric; Indian Saffron	1	10295.0
Cymbopogon nardus Ceylon Citronella; Citronella	1	600.0
Cymbopogon citratus West Indian Lemongrass; Lemongrass	1	
Cyperus rotundus Nutsedge	1	
Datura stramonium Jimsonweed	1	
Daucus carota Carrot	1	
Dracocephalum thymiflora Thyme-Flowered Moldavica	1	268.0
Elettaria cardamomum Cardamom	1	112000.0
Elsholtzia polystachya Bush Mint	1	
Elsholtzia pilosa Hairy Mint Shrub	1	
Elsholtzia cristata Furan Chemotype	1	
Elsholtzia blanda Bantulsi; Bantaluki	1	
Ephedra sinica Chinese Ephedra; Ma Huang	1	
Eucalyptus viridis	1	
Eucalyptus tetraptera	1	
Eucalyptus tereticornis	1	
Eucalyptus stoatei	1	
Eucalyptus sparsa	1	
Eucalyptus sp Gum	1	
Eucalyptus sideroxylon	1	
Eucalyptus siderophloia	1	
Eucalyptus saligna	1	
Eucalyptus punctata	1	
Eucalyptus porosa	1	
Eucalyptus populnea	1	
Eucalyptus polyanthemos	1	
Eucalyptus paniculata	1	
Eucalyptus oviformis	1	
Eucalyptus odorata	1	
Eucalyptus ochrophloia	1	
Eucalyptus occidentalis	1	
Eucalyptus nova-anglica New England 'peppermint'	1	
Eucalyptus moluccana	1	

Plant	# Chemicals	Total PPM
<i>Eucalyptus melliodora</i>	1	
<i>Eucalyptus melanophloia</i>	1	
<i>Eucalyptus maideni</i>	1	
<i>Eucalyptus maculata</i> Gum	1	
<i>Eucalyptus leucoxylon</i>	1	
<i>Eucalyptus largisparsa</i>	1	
<i>Eucalyptus lansdowneana</i>	1	
<i>Eucalyptus intertexta</i>	1	
<i>Eucalyptus incrassata</i>	1	
<i>Eucalyptus globulus</i> Tasmanian Bluegum; Blue Gum; Eucalypt	2	63000.0
<i>Eucalyptus forrestiana</i>	1	
<i>Eucalyptus fasciculosa</i>	1	
<i>Eucalyptus erythrandra</i>	1	
<i>Eucalyptus dolichorhyncha</i>	1	
<i>Eucalyptus diversicolor</i>	1	
<i>Eucalyptus desquamata</i>	1	
<i>Eucalyptus dealbata</i>	1	
<i>Eucalyptus cuprea</i>	1	
<i>Eucalyptus cladocalyx</i>	1	
<i>Eucalyptus citriodora</i> Lemon-Scented Gum; Lemon Eucalyptus; Spotted Gum; Citron-Scented Gum	1	7160.0
<i>Eucalyptus ceratocorys</i>	1	
<i>Eucalyptus camaldulensis</i>	1	
<i>Eucalyptus bridgesiana</i> Bridges' Eucalyptus	1	
<i>Eucalyptus brassiana</i> Brasses' Eucalyptus	1	
<i>Eucalyptus botryoides</i>	1	
<i>Eucalyptus bosistoana</i>	1	
<i>Eucalyptus blakelyi</i>	1	
<i>Eucalyptus behriana</i>	1	
<i>Eucalyptus astringens</i>	1	
<i>Eucalyptus angulosa</i>	1	
<i>Eucalyptus albens</i>	1	
<i>Ficus carica</i> Fig; Figuier Commun (Fr.); Figueira (Port.); Feigenbaum (Ger.); Higuera Comun (Sp.); Echte Feige (Ger.); Higo (Sp.); Fico (Ital.)	1	
<i>Foeniculum vulgare</i> Fennel	1	600.0
<i>Glechoma hederacea</i> Alehoof	1	74.0
<i>Glycine max</i> Soybean	1	
<i>Hedeoma reverchonii</i> Reverchon's Pennyroyal	1	894.0
<i>Hedeoma pulegioides</i> American Pennyroyal	1	60.0
<i>Hedeoma drummondii</i> Drummond's Pennyroyal	1	4684.0
<i>Helianthus annuus</i> Sunflower; Girasol	1	
<i>Hibiscus sabdariffa</i> Rosa de Jamaica (Sp.); Kharkadi; Sorrel; Jamaica Sorrel; Acedera de Guinea (Sp.); Roselle; Indian Sorrel; Malventee (Ger.); Sereni (Sp.); Rosella (Ger.); Red Sorrel	2	
<i>Houttuynia cordata</i> Fishwort; Yu Xing Cao; Dokudami	1	

Plant	# Chemicals	Total PPM
<i>Hyptis suaveolens</i> Wild Hops	1	9110.0
<i>Hyssopus officinalis</i> Hyssop	1	1220.0
<i>Illicium verum</i> Star Anise; Sternanis (Ger.); Chinese Star Anise; Chinesischer Sternanis (Ger.); anis de China (Sp.); anis estrellado (Sp.)	1	7000.0
<i>Isanthus brachiatus</i> False Pennyroyal	1	
<i>Juniperus sabina</i> Sabine	1	
<i>Lantana camara</i> Wild Sage; Lantana	1	
<i>Laurus nobilis</i> Bayleaf; Sweet Bay; Laurel; Bay; Bay Laurel; Grecian Laurel	1	39800.0
<i>Lavandula x intermedia</i> Dutch Lavender; Lavandin	1	2220.0
<i>Lavandula x hybrida</i> Hybrid Lavender	1	
<i>Lavandula latifolia</i> Spike Lavender; Aspic; Broad-Leaved Lavender	1	6868.0
<i>Lavandula angustifolia</i> English Lavender	1	
<i>Lepechinia calycina</i> Epling's Lepechinia	1	1970.0
<i>Levisticum officinale</i> Lovage	1	
<i>Lindera benzoin</i> Spicebush; Wild Allspice; Fieberstrauch (Ger.); Benjamin Bush	1	
<i>Lippia alba</i> White Lippia	1	
<i>Liquidambar styraciflua</i> Sweetgum; American Styrax	1	
<i>Liquidambar orientalis</i> Oriental Styrax; Oriental Storax	1	
<i>Litsea glaucescens</i> Mexican bay	1	
<i>Lycopersicon esculentum</i> Tomato	1	
<i>Lycopus virginicus</i> Bugle	1	36.0
<i>Magnolia denudata</i> Hsin-I; Xin-Yi	1	
<i>Malus domestica</i> Apple	1	
<i>Melaleuca</i> sp Tea-Tree	1	
<i>Melaleuca cajuputi</i> Vietnamese Cajuput Oil	1	
<i>Melaleuca alternifolia</i> Teatree	1	
<i>Mentha x piperita</i> Peppermint	1	4390.0
<i>Mentha spicata</i> Spearmint; Hortela da Folha Miuda	2	18750.0
<i>Mentha pulegium</i> European Pennyroyal	1	40.0
<i>Mentha longifolia</i> Biblical Mint	1	21860.0
<i>Mentha arvensis</i> var. <i>piperascens</i> Japanese Mint; Cornmint; Field Mint	1	
<i>Mentha aquatica</i> Water Mint	1	
<i>Micromeria thymifolia</i>	1	
<i>Micromeria teneriffae</i>	1	
<i>Micromeria myrtifolia</i> Haydarotu; Dagcayi; Topukcayi	2	
<i>Micromeria fruticosa</i> Tea Hyssop; Zuta; Zopha	1	
<i>Micromeria congesta</i> Kaya Yarpuzu	2	
<i>Moldavica thymiflora</i> Thyme-Flowered Moldavica	1	
<i>Monarda russeliana</i> Russel's Monarda	1	650.0
<i>Monarda punctata</i> Horsemint	1	13728.0
<i>Monarda media</i> Mean Monarda	1	2702.0
<i>Monarda lindheimeri</i> Lindheimer's Monarda	1	956.0
<i>Monarda fistulosa</i> Wild Bergamot	1	10012.0

Plant	# Chemicals	Total PPM
<i>Monarda didyma</i> Oswego Tea; Beebalm	1	5614.0
<i>Monarda clinopodia</i> Clinopod Bergamot	1	2766.0
<i>Monarda citriodora</i> Lemon Mint	1	1228.0
<i>Myristica fragrans</i> Mace; nuez moscada (Sp.); Nutmeg; Muskatnussbaum (Ger.); nogal moscado (Sp.)	1	9120.0
<i>Myrtus communis</i> Mirto (Sp.); Arrayan (Sp.); Myrte (Ger.); Myrtle	1	4130.0
<i>Nepeta racemosa</i> Catmint	2	
<i>Nicotiana tabacum</i> Tobacco	2	
<i>Ocimum tenuiflorum</i> Anise-Scented Basil	1	
<i>Ocimum kilimandscharicum</i> Kenyan Perennial Basil; African Blue Basil	1	
<i>Ocimum gratissimum</i> Shrubby Basil; Agbo	1	
<i>Ocimum canum</i> Hoary Basil	1	
<i>Ocimum basilicum</i> Basil; Cuban Basil; Sweet Basil	1	911.0
<i>Origanum vulgare</i> Green Turkish Oregano	1	192.0
<i>Origanum sipyleum</i> Bayircayi; Guveyoto	1	
<i>Origanum onites</i> Oregano; Pot Marjoram	1	46.0
<i>Origanum minutiflorum</i> Small-Flowered Oregano	2	
<i>Panax ginseng</i> Oriental Ginseng; Ginseng; Korean Ginseng; Chinese Ginseng	1	
<i>Petroselinum crispum</i> Parsley	1	
<i>Peumus boldus</i> Boldo	1	80000.0
<i>Pimenta racemosa</i> West Indian Bay; Bayrum Tree	1	1360.0
<i>Pimenta dioica</i> Clover-Pepper; Allspice; Pimenta; Jamaica-Pepper; Pimento	1	102.0
<i>Pinus sylvestris</i> Scotch Pine	1	
<i>Piper nigrum</i> White Pepper; Pepper; Black Pepper	1	
<i>Piper cubeba</i> Cubeb Pepper; Cubeb	1	2800.0
<i>Piper auritum</i> Hierba Santa; Hoja Santa; Cordoncillo	1	
<i>Prunella vulgaris</i> Heal-All; Self-Heal	1	
<i>Prunus persica</i> Peach	1	
<i>Psidium guajava</i> Guava	1	
<i>Pycnanthemum virginianum</i> Virginia Mountain Mint	1	116.0
<i>Pycnanthemum verticillatum</i> Whorled Mountain Mint	1	84.0
<i>Pycnanthemum torreyi</i> Torrey's Mountain Mint	1	20.0
<i>Pycnanthemum tenuifolium</i> Slenderleaf Mountain Mint	1	2200.0
<i>Pycnanthemum setosum</i> Setose Mountain Mint	1	14198.0
<i>Pycnanthemum pycnanthemoides</i> Typical Mountain Mint	1	232.0
<i>Pycnanthemum pilosum</i> Pilose Mountain Mint	1	140.0
<i>Pycnanthemum muticum</i> Muticous Mountain Mint	1	100.0
<i>Pycnanthemum montanum</i> Montane Mountain Mint	1	1440.0
<i>Pycnanthemum loomisii</i> Loomis' Mountain Mint	1	52080.0
<i>Pycnanthemum incanum</i> Hoary Mountain Mint	1	152.0
<i>Pycnanthemum clinopodioides</i> Clinopod Mountain Mint	1	176.0
<i>Pycnanthemum californicum</i> California Mountain Mint	1	1152.0
<i>Pycnanthemum beadleii</i> Beadle's Mountain Mint	1	56.0

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<i>Pycnanthemum albescens</i> White Mountain Mint	1	540.0
<i>Ravensara aromatica</i> Ravensara	1	
<i>Rheum palmatum</i> Chinese Rhubarb	1	
<i>Ribes nigrum</i> Black Currant	2	
<i>Rosmarinus x mendizabalii</i> Mendizabali's Rosemary	1	
<i>Rosmarinus x lavandulaceus</i> Lavender Rosemary	1	
<i>Rosmarinus tomentosus</i> Hairy Rosemary	1	
<i>Rosmarinus officinalis</i> Rosemary	2	16250.0
<i>Rosmarinus eriocalyx</i> Rosemary	1	
<i>Rubus idaeus</i> Raspberry; Red Raspberry	1	
<i>Salvia triloba</i> Greek Sage	1	37200.0
<i>Salvia sclarea</i> Clary Sage	1	
<i>Salvia officinalis</i> Sage	1	12576.0
<i>Salvia dorisiana</i> 'Honduran' Sage	1	
<i>Sassafras albidum</i> Sassafras	1	
<i>Satureja subspicata</i> Yugoslav Savory	1	
<i>Satureja parvifolia</i> Small-Leaf Pampa Savory	1	
<i>Satureja odora</i> Scented Pampa Savory	1	
<i>Satureja montana</i> Savory; Winter Savory	1	
<i>Satureja hortensis</i> Summer Savory	1	
<i>Satureja douglasii</i> Douglas' Savory	1	390.0
<i>Satureja cuneifolia</i> Cuneate Turkish Savory	2	
<i>Satureja cilicica</i> Turkish Savory	1	
<i>Sideritis pauli</i> El Molinillo Sideritis	1	
<i>Sideritis mugronensis</i>	1	
<i>Sideritis germanicolpitana</i>	1	
<i>Sideritis athoa</i> Kedi Kuyugu Cayi	1	
<i>Stachys germanica</i> Downy Woundwort	1	96.0
<i>Stevia rebaudiana</i> Sweet Leaf of Paraguay; Ca-A-E; Stevia	1	
<i>Tagetes minuta</i> Muster John Henry; Stinking-Roger; Mexican Marigold; Aztec Marigold; Dwarf Marigold; Wild Marigold	1	250.0
<i>Tagetes lucida</i> Anise Marigold; Sweet-Mace; Sweet-Scent Marigold; Sweet-Scent Mexican Marigold	1	
<i>Tagetes erecta</i> Marigold; Aztec Marigold	1	86.0
<i>Tanacetum vulgare</i> Tansy	1	2600.0
<i>Tanacetum parthenium</i> Feverfew	1	
<i>Telosma cordata</i> Merrill flowers	2	
<i>Teucrium scorodonia</i> Germander; Wood Germander	1	
<i>Teucrium salviastrum</i>	1	
<i>Teucrium pseudoscorodonia</i>	1	
<i>Teucrium polium</i> Iberian Golden Germander; Golden Germander	1	
<i>Teucrium oxylepis</i>	1	
<i>Teucrium micropodioides</i> Small 'Cyprus' Germander	1	
<i>Teucrium kotschyanum</i> Stavros Kotschy's Germander	1	

Plant	# Chemicals	Total PPM
<i>Teucrium gnaphalodes</i> Iberian Germander	1	
<i>Teucrium divaricatum</i> Hoary Divaricate Germander	1	
<i>Teucrium cyprium</i> 'Cyprus' Germander	1	
<i>Teucrium asiaticum</i>	1	
<i>Teucrium arduini</i> 'Croatian Alpine' Germander	1	
<i>Thymus zygis</i> Spanish Thyme	1	
<i>Thymus x citriodorus</i> Funk's thyme; Lemon Thyme	1	
<i>Thymus serpyllum</i> Creeping Thyme	1	76.0
<i>Thymus mastichina</i> Spanish Marjoram	1	15000.0
<i>Thymus longicaulis</i> Tas Kekik; Kekik	1	
<i>Thymus funkii</i> Funk's Thyme	1	
<i>Thymus cilicicus</i> 'Anatolian' Thyme	1	
<i>Thymus capitatus</i> 'Sicilian' Thyme; Spanish Origanum; Spanish Thyme	1	60.0
<i>Turnera diffusa</i> Damiana	1	2200.0
<i>Umbellularia californica</i> California Bay	1	18720.0
<i>Vaccinium corymbosum</i> Blueberry	1	
<i>Valeriana officinalis</i> Common Valerian; Valerian; Garden-Heliotrope	1	
<i>Vetiveria zizanioides</i> Cus-Cus; Cuscus Grass; Vetiver	1	
<i>Vitex agnus-castus</i> Chaste-Tree	1	
<i>Zea mays</i> Corn	2	
<i>Zingiber officinale</i> Ginger	1	5490.0