Plants with antibacterial activity

Paula Viñas
José de Felippe Junior

Screening of some plants used in the Brazilian folk medicine for the treatment of infectious diseases.
Mem Inst Oswaldo Cruz;97(7):1027-31, 2002 Oct. Holetz FB; Pessini GL; Sanches NR; Cortez DA; Nakamura CV; Filho BP
Programa de Pós-graduação em Ciências Farmacêuticas, Universidade Estadual de Maringá, Maringá, PR, Brasil.

Resumo: Extracts of 13 Brazilian medicinal plants were screened for their antimicrobial activity against bacteria and yeasts. Of these, 10 plant extracts showed varied levels of antibacterial activity. Piper regnellii presented a good activity against Staphylococcus aureus and Bacillus subtilis, a moderate activity on Pseudomonas aeruginosa, and a weak activity against Escherichia coli. Punica granatum showed good activity on S. aureus and was inactive against the other standard strains. Eugenia uniflora presented moderate activity on both S. aureus and E. coli. Psidium guajava, Tanacetum vulgare, Arctium lappa, Mikania glomerata, Sambucus canadensis, Plantago major and Erythrina speciosa presented some degree of antibacterial activity. Splanches acmela, Lippia alba, and Achillea millefolium were considered inactive. Five of the plant extracts presented compounds with RF values similar to the antibacterial compounds visible on bioautogram. Of these, three plants belong to the Asteraceae family. This may mean that the same compounds are responsible for the antibacterial activity in these plants. Anticandidal activity was detected in nine plant extracts (P. guajava, E. uniflora, P. granatum, A. lappa, T. vulgare, M. glomerata, L. alba, P. regnellii, and P. major). The results might explain the ethnobotanical use of the studied species for the treatment of various infectious diseases

Mother nature’s combinatorial libraries; their influence on the synthesis of drugs.

Resumo: Natural products or secondary metabolites, whether from the microbial, plant or marine worlds, represent the results of evolutionary pressures to preserve and enhance the life of their producing organism. They have evolved into structurally and usually stereochemically complex compounds with specific bioactivities. They thus represent a diverse 'combinatorial library' that may have potential pharmaceutical use. In principle, the combination of this diverse library with the methods of combinatorial chemistry could lead to an unlimited supply of diverse and complex structures, and is recommended as a fruitful approach for future drug development. Examples of the application of combinatorial methods to nature's combinatorial library will be presented and discussed, with an emphasis on the antitumor, anti-infective and pain control disease areas.

Antimicrobial properties of allicin from garlic.
Microbes Infect;1(2):125-9, 1999 Feb. Ankri S; Mirelman D - Israel

Resumo: Allcin, one of the active principles of freshly crushed garlic homogenates, has a variety of antimicrobial activities. Allicin in its pure form was found to exhibit i) antibacterial activity against a wide range of Gram-negative and Gram-positive bacteria, including multidrug-resistant enterobacteriogenic strains of Escherichia coli; ii) antifungal activity, particularly against Candida albicans; iii) antiparasitic activity, including some major human intestinal protozoan parasites such as Entamoeba histolytica and Giardia lamblia; and iv) antiviral activity. The main antimicrobial effect of allicin is due to its chemical reaction with thiol groups of various enzymes, e.g. alcohol dehydrogenase, thioredoxin reductase, and RNA polymerase, which can affect essential metabolism of cytoene proteinase activity involved in the virulence of E. histolytica.

Antimicrobial activities of some selected traditional Ethiopian medicinal plants used in the treatment of skin disorders.
J Ethnopharmacol;100(1-2):168-75, 2005 Aug 22. Tadeg H; Mohammed E; Asres K; Gebre-Mariam T
Department of Pharmaceutics, School of Pharmacy, Addis Ababa University, P.O. Box 1176, Ethiopia.

Resumo: Hydroalcoholic extracts of eight species of medicinal plants, namely, Acokanthera schimperi (Apocynaceae), Calpurnia aurea (Leguminosae), Kalanchee petiinana (Crassulaceae), Lippia adoensis (Verbenaceae), Malva parviflora (Malvaceae), Olinalia rochetiana (Oliniaceae), Phytolacca dodecandra (Phytolaccaceae) and Verbascum sinaiticum (Scrophulariaceae), traditionally used in the treatment of various skin disorders were screened for antimicrobial activity against different strains of bacteria and fungi which are known to cause different types of skin infections. The tests were carried out using agar well diffusion method at three concentration levels (100, 50 and 25mg/ml) of the crude extracts. The MICs of all the species were found to be effective against the bacterial organisms, the results indicating the potential of these herbal drugs in treating microbial infections of the skin, thus, justifying their claimed uses in the treatment of various skin disorders, the majority of which are of infectious origin.

Antibacterial effects of commercial essential oils over locally prevalent pathogenic strains in Mexico.
Resumo: Locally prevalent pathogenic bacteria 189 Gram (+) and 135 Gram (+) strains, all isolated from pediatric patients severely infected, were tested in vitro against 11 essential oils from commercial origin. All the strains showed resistance to selected antibiotics. Cinnamomum verum, Origanum vulgare and Thymus vulgaris exhibited the highest and broadest antibacterial activity. Emphasis is made in the potential implications of these resources, uncommon at the clinical setting of the study, employed against non-commercial, locally pathogenic strains, being a step to submit in the ensuing period essential oils from plants used in Mexican traditional medicine.
Antimicrobial activity, toxicity and the isolation of a bioactive compound from plants used to treat sexually transmitted infections. J Basic Microbiol;45(2):106-14, 2005. Aqil F; Khan MS; Owais M; Ahmad I

Department of Agricultural Microbiology, Faculty of Agricultural Sciences, Aligarh Muslim University, Aligarh--202002 India.

Resumo: Ethanol extracts and some fractions from 10 Indian medicinal plants, known for antibacterial activity, were investigated for their ability to inhibit clinical isolates of beta-lactamase producing methicillin-resistant Staphylococcus aureus (MRSA) and methicillin-sensitive S. aureus (MSSA). Synergistic interaction of plant extracts with certain antibiotics was also evaluated. The MRSA test strains were found to be multi-drug resistant and also exhibited high level of resistance to common beta-lactam antibiotics. These strains produced beta-lactamases, which hydrolyze one or other beta-lactam antibiotics, tested. The extract of the plants from Camella sinensis (leaves), Delonix regia (flowers), Holarrhena antidysenterica (bark), Lawsonia inermis (leaves), Punica granatum (rind), Terminalia chebula (fruits) and Terminalia bellerica (fruits) showed a broad-spectrum of antibacterial activity with an inhibition zone size of 11 mm to 27 mm, against all the test bacteria. The extracts from the leaves of Ocimum sanctum showed better activity against the three MRSA strains. On the other hand, extracts from Allium sativum (bulb) and Citrus sinensis (rind) exhibited little or no activity, against MRSA strains. The antibacterial potency of crude extracts was determined in terms of minimum inhibitory concentration (MIC) by the tube dilution method. MIC values, of the plant extracts, ranged from 1.3 to 8.2 mg/ml, against the test bacteria. Further, the extracts from Punica granatum and Delonix regia were fractionated in benzene, acetone and methanol. Antibacterial activity was observed in acetone as well as in the methanol fractions. In vitro synergistic interaction of crude extracts from Camella sinensis, Lawsonia inermis, Punica granatum, Terminalia chebula and Terminalia bellerica was detected with tetracycline. Moreover, the extract from Camella sinensis also showed synergism with ampicillin. TLC of the above extracts revealed the presence of major phytochemicals, like alkaloids, glycosides, flavonoids, phenols and saponins. TLC-bioautography indicated phenols and flavonoids as major active compounds.

Antimicrobial screening of some Peruvian medicinal plants used in Calleria District. J Ethnopharmacol;99(2):309-12, 2005 Jun 3. Klouce P; Polesny Z; Svobodova B; Vlkova E; Kososka L Department of Crop Sciences and Agroforestry, Institute of Tropics and Subtropics, Czech University of Agriculture Prague, Kamýcká 129, 165 21 Prague 6-Suchdol, Czech Republic

Resumo: Nine ethanol extracts of Brunfelsia grandiflora (Solanaceae), Caesalpinia spinosa (Caesalpiniaceae), Dracontium loretense (Araceae), Equisetum giganteum (Equisetaceae), Maytenus macrocarpa (Celastraceae), Phyllanthus amarus (Euphorbiaceae), Piper aduncum (Piperaceae), Terminalia catappa (Combretaceae), and Uncaria tomentosa (Rubiaceae), medicinal plants traditionally used in Calleria District for treating conditions like tuberculosis, were screened for antimicrobial activity against nine bacterial strains using the broth microdilution method. Among the plants tested, Phyllanthus amarus and Terminalia catappa showed the most promising antimicrobial properties, inhibiting all of the strains tested with minimum inhibitory concentrations (MICs) ranging from 0.25 to 16 mg/ml. The extract from aerial part of Piper aduncum was significantly more active against Gram-positive (MICs ranging from 1 to 2 mg/ml) than against Gram-negative bacteria (MICs > 16 mg/ml).

Antimicrobial properties of common herbal remedies of the southwest. J Ethnopharmacol;99(2):253-7, 2005 Jun 3. Romero CD; Chopin SF; Buck G; Martinez E; Garcia M; Bixby L

Resumo: Curanderismo, widely practiced in the southwest, is an alternative medical system that has been neglected by scientific research. This project analyzed the antibiotic properties of 23 common herbal remedies used in South Texas to treat wounds and infections. Ethanolic tinctures and aqueous extracts of each plant were prepared and applied to blank diffusion disks. These disks were desiccated and used in Kirby-Bauer disk diffusion susceptibility tests on three bacteria: Staphylococcus aureus, Pseudomonas aeruginosa, and Escherichia coli. Control disks contained solvent only. The efficacy of the tinctures and aqueous extracts was compared to that of commercially prepared antibiotic diffusion disks. No inhibition was observed with the aqueous extracts. The various tincture-saturated disks produced zones of clearance ranging from 1 to 5 mm. Ten plants consistently inhibited bacterial growth of Staphylococcus aureus. None of the plants tested produced consistent inhibition of the two Gram-negative species, Pseudomonas aeruginosa and Escherichia coli. No zones of clearance were produced by the solvent-only control disks. The zones of clearance produced by commercial antibiotics were, on average, larger and more uniform than those produced by the tincture disks. Thus, it appears that some of the herbal remedies used in folk medicine are potentially effective antibacterial agents against Staphylococcus aureus.

Informant consensus factor and antibacterial activity of the medicinal plants used by the people of San Rafael Coxcatlán, Puebla, México. J Ethnopharmacol;97(3):429-39, 2005 Mar 21. Canales M; Hernández T; Caballero J;romo de Vivar A; Avila G; Duran A; Lira R

Resumo: Using ethnobotanical techniques, the medicinal flora used by the inhabitants of San Rafael Coxcatlán, Puebla was determined. During the field work, two types of interviews were applied (free listing and semi-structured) to 60 informants, who supplied consistent information concerning the use of 46 species of medicinal plants. Further analysis showed 13 categories of different medicinal use. An informant consensus factor was calculated and 16 species were selected due to their utilization in the treatment of diseases of possible bacterial origin. Of these 16 plants, sequential extractions were made with hexane, ethyl acetate and methanol. The obtained extracts showed the biggest activity. Moreover, these species also had the highest informant consensus factor values.


Department of Pharmacognosy, Faculty of Pharmacy, Sana'a-University, PO Box 33039, Sana'a, Yemen.

Resumo: Twenty-five selected plants belonging to 19 families were collected from different localities of the island Soqotra, dried and extracted with the solvents chloroform, methanol and hot water to yield 80 extracts. The extracts were tested for their antimicrobial activity against several Gram-positive and Gram-negative bacteria and against one yeast species using agar diffusion method. Antibacterial activity was demonstrated especially against Gram-positive bacteria including multiresistant Staphylococcus strains. The greatest activity was exhibited by the methanolic extracts of Boswellia elongata, Boswellia ameero, Buxus huberbrandti, Commiphora parvifolia, Jatropha unicoistata, Kalanchoe farinacea, Pulicaria stephanacarpa, Punica protopunica, Wthania adunensis and Wthania riebecki. Only the methanolic extract of Buxus huberbrandti displayed significant antifungal activity.


Department of Agricultural Microbiology, Faculty of Agricultural Sciences, Aligarh Muslim University, Aligarh--202002 India.

Resumo: Ethanol extracts and some fractions from 10 Indian medicinal plants, known for antibacterial activity, were investigated for their ability to inhibit clinical isolates of beta-lactamase producing methicillin-resistant Staphylococcus aureus (MRSA) and methicillin-sensitive S. aureus (MSSA). Synergistic interaction of plant extracts with certain antibiotics was also evaluated. The MRSA test strains were found to be multi-drug resistant and also exhibited high level of resistance to common beta-lactam antibiotics. These strains produced beta-lactamases, which hydrolyze one or other beta-lactam antibiotics, tested. The extract of the plants from Camella sinensis (leaves), Delonix regia (flowers), Holarrhena antidysenterica (bark), Lawsonia inermis (leaves), Punica granatum (rind), Terminalia chebula (fruits) and Terminalia bellerica (fruits) showed a broad-spectrum of antibacterial activity with an inhibition zone size of 11 mm to 27 mm, against all the test bacteria. The extracts from the leaves of Ocimum sanctum showed better activity against the three MRSA strains. On the other hand, extracts from Allium sativum (bulb) and Citrus sinensis (rind) exhibited little or no activity, against MRSA strains. The antibacterial potency of crude extracts was determined in terms of minimum inhibitory concentration (MIC) by the tube dilution method. MIC values, of the plant extracts, ranged from 1.3 to 8.2 mg/ml, against the test bacteria. Further, the extracts from Punica granatum and Delonix regia were fractionated in benzene, acetone and methanol. Antibacterial activity was observed in acetone as well as in the methanol fractions. In vitro synergistic interaction of crude extracts from Camella sinensis, Lawsonia inermis, Punica granatum, Terminalia chebula and Terminalia bellerica was detected with tetracycline. Moreover, the extract from Camella sinensis also showed synergism with ampicillin. TLC of the above extracts revealed the presence of major phytochemicals, like alkaloids, glycosides, flavonoids, phenols and saponins. TLC-bioautography indicated phenols and flavonoids as major active compounds.
diseases.

J Ethnopharmacol;96(3):515-9, 2005 Jan 15. Tsikalange TE; Meyer JJ; Hussein AA

Department of Botany, University of Pretoria, Pretoria 0002, South Africa.

Resumo: Extracts of six ethnobotanically selected medicinal plants (Ancredera cordifolia, Elaeodendron transvaalense, Elephantorrhiza burkei, Senna petersoniana, Terminalia sericea and Rauvolfia caffra) used traditionally to treat sexually transmitted diseases (STD's) were investigated for antibacterial activity using the agar dilution method. Of the six collected, Terminalia sericea, Senna petersoniana and Ancredera cordifolia were also investigated for cytotoxicity. The phytochemical studies on Senna petersoniana resulted in the isolation of luteolin, which also showed antimicrobial activity. Only the Senna petersoniana extract and luteolin isolated from it were tested for antiviral activity and showed some activity at the highest non-toxic concentration of 24 and 500 microg/ml, respectively. The results of the antimicrobial screening support the ethnomedicinal uses of these plants to some extent.

Anti-fungal and anti-bacterial activity of some herbal remedies from Tanzania.

J Ethnopharmacol;96(3):461-9, 2005 Jan 15. de Boer HJ; Kool A; Broberg A; Mziray WR; Hedberg I; Levenfors JJ

Resumo: Plants are not only important to the millions of people to whom traditional medicine serves as the only opportunity for health care and to those who use plants for various purposes in their daily lives, but also as a source of new pharmaceuticals. During interviews with the Pare people from Northeastern Tanzania, 29 plants that are used for medicinal purposes as well as 41 plants used for non-medical purposes were reported. Six medicinally used plants were selected for bioactivity analysis. Extracts of Coccinia indica, Cineraria grandiflora, Pavonia urens, Marattia fraxinea, Clutia abyssinica var. usambarica, and Vangueria infausta were made and screened against several test organisms.

In vitro inhibitory effect of flavonoids on growth, infection and vacuolation of Helicobacter pylori.

Planta Med;71(3):197-201, 2005 Mar. Shin JE; Kim JM; Bae EA; Hyun YJ; Kim DH College of Pharmacy, Kyung Hee University, 1 Hoegi, Dongdaemun-ku, Seoul 130-701, Korea

Resumo: Flavonoids, which are main constituents of herbal medicines, have been reported to inhibit the growth of Helicobacter pylori (HP). Therefore, to evaluate the anti-HP activity of some flavonoids (flavanols, flavones, flavonols and isoflavonoids), their effects on the growth and vacuolation of HP as well as the infective properties of HP against HeLa cells were investigated. Catechins, quercetin and naringenin weakly inhibited the growth of HP, but all tested compounds did not inhibit HP infection into KATO III cells and HP urease activity. Quercetin and naringenin inhibited HP VacA vacuolation in HeLa cells with IC (50) values of 0.046 and 0.36 mM, respectively. Quercetin also inhibited procaspe-3 activation to caspase-3 in HeLa cells induced by HP VacA toxin, which may induce cell death via the proteolytic activation of a cascade of caspases. However, quercetin did not affect Bax and Bcl-2 protein levels. Based on these findings, quercetin may improve gastric cell death by inhibiting apoptotic signaling by HP VacA toxin. Abbreviations. HP: Helicobacter pylori; BSA: bovine serum albumin; ECL: enhanced chemiluminescence; MIC: minimum inhibitory concentration; MTT: methylthiazolyldiphenyl-tetrazolium bromide; PBS: phosphate-buffered saline; VacA: Vacuolating cytotoxity.

Antibacterial properties of essential oils from Thai medicinal plants.

Fitoterapia;76(2):233-6, 2005 Mar. Wannissorn B; Jarkasem S; Siriwangchaisi T; Thubthimthead Department of Biotechnology, Thailand Institute of Scientific and Technological Research, Technopolis, Klong-Luang, Pathumthani 12120, Thailand. bhuisa@tistr.or.th

Resumo: By using disc diffusion assay, the antimicrobial activity of 32 essential oil samples extracted from local plants or plants cultivated in Thailand was evaluated against zoonotic enteropathogens including Salmonella spp., Escherichia coli O157, Campylobacter jejuni and Clostridium perfringens which are important for broiler export. Out of the essential oil tested, only the essential oil of Zingiber cassumuna, Cinnamomum bejolghota, Mentha arvensis var. pipercacens, Cymbopogon citratus and Ocimum basilicum var. citratum showed promising anti-bacterial activity against the bacteria tested.

Anti-Helicobacter pylori activity of Plumbago zeylanica L.

FEMS Immunol Med Microbiol;43(3):407-12, 2005 Mar 1. Wang YC; Huang TL Department of Food Science, National Chung-Hsing University, 250 Kuokuang Road, Taichung 40227, Taiwan, 402, ROC. ycwang@dragon.nchu.edu.tw

Resumo: It has been shown that the presence of infection by Helicobacter pylori is strongly associated with gastric cancer and peptic ulceration. In western medicine, a 3-fold therapeutic regimen, emphasizing the use of antibiotics, is typically used to suppress H. pylori activity. However, antibiotic drug resistance frequently develops as a consequence of such treatment. In our previous study, 50 Taiwanese folk medicinal plants were screened for their anti-H. pylori activities. The results revealed that Plumbago zeylanica L. had the highest inhibitory effects against H. pylori. In this study, therefore, we have focused on establishing the anti-H. pylori activities of P. zeylanica L. Water and the organic solvents ethanol, ethyl acetate and acetone were used for P. zeylanica L. extraction, obtaining yields of 1.66-6.84% (w/w). Without the extraction water, higher anti-H. pylori activity was demonstrated for all the extracts, both using the agar diffusion and dilution methods. The ethyl acetate extract exhibited the lowest minimum inhibitory concentrations against five H. pylori strains, of which ranged from 0.32 to 1.28 mg ml-1, followed, in ascending order, by the acetone, ethanol and water analogs. Bacterial activity was determined for P. zeylanica L. extracts, with the lowest minimum bactericidal concentrations (5.12-20.48 mg ml-1) demonstrated for the ethyl acetate, followed, in ascending order, by the acetone and ethanol analogs. Bacterial activity appeared to be in a dose-dependent manner. Through a broad pH range (2-7), bactericidal activity was not affected when extract concentrations were greater than or equal to the minimum bactericidal concentration. High stability was demonstrated for the ethyl acetate P. zeylanica L. extract within pH range of 1-7, exhibiting all pH treatments bactericidal activity.

New active clerodane diterpenoids from the bark of Casearia grewiifolia.

J Nat Prod;68(2):183-8, 2005 Feb. Kanokmedhakul S; Kanokmedhakul K; Kanarsa T; Buayairaksa M Department of Chemistry, Applied Taxonomic Research Center, Faculty of Science, Khon Kaen University, Khon Kaen 40002, Thailand. somdej@kku.ac.th

Resumo: Bioactivity-guided fractionation of hexane and dichloromethane extracts of the bark of Casearia grewiifolia afforded four new clerodane diterpenoids, caseargrewiins A-D (1-4), and two known clerodane diterpenes, rel-(2S,5R,6R,8S,9S,10R,18S,19R)-18,19-diacetoxy-18,19-epoxy-6-hydroxy-2-(2-methylbutanoyloxy)cleroda-3,13(16),14-triene (5) and rel-(2S,5R,6R,8S,9S,10R,18S,19R)-18,19-diacetoxy-18,19-epoxy-6-methoxy-2-(2-methylbutanoyloxy)cleroda-3,13(16),14-triene (6). The structures of 1-4 were established on the basis of the interpretation of their 1D and 2D NMR spectral data. The absolute configuration of 4 was determined by the modified Mosher's method. All compounds exhibited promising antimalarial and antimycobacterial activities but also cytotoxicity against three cancer cell lines.
Catechin gallates inhibit multidrug resistance (MDR) in Staphylococcus aureus.

**Planta Med;70(12):1240-2, 2004 Dec. Gibbons S; Moser E; Kaatz GW**

Resumo: Epicatechin gallate (1) and epigallocatechin gallate (2) were evaluated for their antibacterial and efflux inhibitory activity against a wild-type and three multidrug-resistant (MDR) strains of Staphylococcus aureus. Compound 2 was more active than 1 based on minimum inhibitory concentrations (MICs; 32-64 versus 64->512 microg/mL, respectively). When incorporated into the growth medium at 20 microg/mL, both compounds exhibited a four-fold potentiation of the activity of norfloxacin against a norfloxacin-resistant strain of S. aureus overexpressing the NorA multidrug efflux pump. Against this strain 1 was moderately more potent than 2 as an inhibitor of ethidium efflux, but at < or = 20 microM both compounds paradoxically stimulated efflux. This phenomenon has not been encountered previously in the analysis of inhibitors of multidrug efflux.

**Preliminary studies on activity of Ocimum sanctum, Drynaria quercifolia, and Annona squamosa against Neisseria gonorrhoeae.**

**Sex Transm Dis;32(2):106-11, 2005 Feb. Shokeen P; Ray K; Bala M; Tandon V Dr. B.R. Ambedkar Center for Biomedical Research, University of Delhi, Delhi, India.**

Resumo: BACKGROUND: Despite the progressive increase of antimicrobial resistance of Neisseria gonorrhoeae worldwide, there are limited reports of alternative remedies from plants. GOAL: The aim of the current study was to screen 3 plants, Ocimum sanctum, Drynaria quercifolia, and Annona squamosa, for activity against Neisseria gonorrhoeae. STUDY: By disc diffusion method, extracts of these 3 plants were screened for activity against Neisseria gonorrhoeae; their antimicrobial activity was calculated as percentage inhibition and compared with penicillin and ciprofloxacin. RESULTS: The extracts of all 3 plants caused inhibition of Neisseria gonorrhoeae clinical isolates and WHO strains, more so than the multidrug resistant Neisseria gonorrhoeae. CONCLUSION: Neisseria gonorrhoeae clinical isolates and WHO strains were sensitive to extracts of Ocimum sanctum, Drynaria quercifolia, and Annona squamosa. This motivates us to isolate the active component/second from the 3 plants.

**Effective medicinal plants against enterohaemorrhagic Escherichia coli O157:H7.**

**J Ethnopharmacol;94(1):49-54, 2004 Sep. Voravuthikunchai S; Lortheeranuvat A; Jeeju W; Sririrak T; Phongpaichit S; Supawat T**

Resumo: The stimulating effect of subinhibitory concentrations of antibiotics on the production of verocytotoxin (VT) by enterohaemorrhagic Escherichia coli (EHEC) O157:H7 has been claimed. The purpose of this study was to find an alternative, but bioactive medicine for the treatment of this organism. Fifty-eight preparations of aqueous and ethanolic extracts of 38 medicinal plant species commonly used in Thailand to cure gastrointestinal infections were tested for their antibacterial activity against different strains of Escherichia coli, including 6 strains of Escherichia coli O157:H7, Escherichia coli O26:H11, Escherichia coli O111:NM, Escherichia coli O22: 5 strains of Escherichia coli isolated from bovine; and Escherichia coli ATCC 25922. Inhibition of growth was primarily tested by the paper disc agar diffusion method. Among the medicinal plants tested, only 8 species (21.05%) exhibited antimicrobial activity against Escherichia coli O157:H7. Acacia catechu, Holarhenna antisydserenica, Peltophorum pterocarpum, Psidium guajava, Punica granatum, Quercus infectoria, Uncaria gambir, and Walsura robusta demonstrated antibacterial activity with inhibition zones ranging from 7 to 17 mm. The greatest inhibition zone against Escherichia coli O157:H7 (RIMD 05091083) was produced from the ethanolic extract of Quercus infectoria. Minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) were determined by the agar microdilution method and agar dilution method in petri dishes with millipore filter. Both aqueous and ethanolic extracts of Quercus infectoria and aqueous extract of Punica granatum were highly effective against Escherichia coli O157:H7 with the best MIC and MBC values of 0.09, 0.78 and 0.19, 0.39 mg/ml, respectively. These plant species may provide alternative but bioactive medicines for the treatment of Escherichia coli O157:H7 infection.

**Antimicrobial evaluation of some medicinal plants for their anti-enteric potential against multi-drug resistant Salmonella typhi.**

**Phytother Res;18(8):670-3, 2004 Aug. Ranj P; Khullar N Department of Biotechnology, Panjab University, Chandigarh-160 014, India.**

Resumo: Screening was done of some plants of importance in the Ayurvedic system of traditional medicine used in India to treat enteric diseases. Fifty four plant extracts (methanol and aqueous) were assayed for their activity against multi-drug resistant Salmonella typhi. Strong antibacterial activity was shown by the methanol extract of Aegle marmelos, Salmala malabarica, Punica granatum, Myristica fragrans, Holarhenna antisydserenica, Terminalia arjuna and Triphal (mixture of Emblica of ficinalis, Terminalia chebula and Terminalia berciera). Moderate antimicrobial activity was shown by Picorhiza kurroa, Acacia catechu, Holarrhena antidysenterica, Peltophorum pterocarpum, Psidium guajava, Punica granatum, Quercus infectoria, Uncaria gambir, and Walsura robusta demonstrated antibacterial activity with inhibition zones ranging from 7 to 17 mm. The greatest inhibition zone against Escherichia coli O157:H7 (RIMD 05091083) was produced from the ethanolic extract of Quercus infectoria. Minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) were determined by the agar microdilution method and agar dilution method in petri dishes with millipore filter. Both aqueous and ethanolic extracts of Quercus infectoria and aqueous extract of Punica granatum were highly effective against Escherichia coli O157:H7 with the best MIC and MBC values of 0.09, 0.78 and 0.19, 0.39 mg/ml, respectively. These plant species may provide alternative but bioactive medicines for the treatment of Escherichia coli O157:H7 infection.

**Anticariogenic activity of some tropical medicinal plants against Streptococcus mutans.**

**Fitoterapia;75(6):596-8, 2004 Sep. Hwang JK; Shim JS; Chung JY Department of Biotechnology and Bioproducts Research Center, Yonsei University, Seoul 120-749, South Korea. jchwang@yonsei.ac.kr**

Resumo: The methanol extracts of five tropical plants, Baeckea frutescens, Glycyrrhiza glabra, Kaempferia pandurata, Physalis angulata and Quercus infectoria, exhibited potent antibacterial activity against the cariogenic bacterium Streptococcus mutans. In particular, G. glabra, K. pandurata and P. angulata conferred fast killing bactericidal effect against S. mutans in 2 min at 50 microg/ml of extract concentration.

**Antibacterial activity of the Chinese traditional medicine, Zi Hua Di Ding.**

**Phytother Res;18(6):497-500, 2004 Jun. Xie C; Kokubun T; Houghton PJ; Simmonds MS Institute of Medicinal Plant Development, Chinese Academy of Medical Sciences, XiBeiWang, HaiDian District, Beijing 100094, China.**

Resumo: The antibacterial activity of extracts from species of plants used in the Chinese medicine, Zi Hua Di Ding (Viola yedoensis, V. prionantha, Cordylis bungeana and Guedenstaedtia varna), was tested against Bacillus subtilis and Pseudomonas syringae using a bioautographic assay. The petroleum ether and ethyl acetate extracts of all four species of plants showed activity against both species of bacteria, whereas the methanol and aqueous methanol extracts were inactive. Three fractions from the petroleum ether extracts of V. yedoensis, V. prionantha and C. bungeana showed activity against B. subtilis at 6.25 microg/mL. Preliminary analysis of these active fractions indicates that they contain long chain carboxylic acids.

**Alternative versus conventional treatment strategy in uncomplicated acute otitis media in children: a prospective, open, controlled parallel-group comparison.**

**Int J Clin Pharmacol Ther;42(2):110-9, 2004 Feb. Wustrow TP; Otowoven Study Group.**

Resumo: OBJECTIVES: Evidence from clinical trials questions the benefit-risk ratio of first-line antibiotic treatment for uncomplicated...
acute otitis media in childhood. Alternative treatment strategies are very popular but have not been the subject of larger controlled clinical trials. This trial compares an alternative with a conventional treatment strategy for acute otitis media. METHODS AND PATIENTS: 390 children aged 1-10 years presenting with uncomplicated acute otitis media participated in a prospective, open, non-randomized, controlled, parallel-group study. According to self-assignment of investigators, children were treated either conventionally (fixed combination of plant-based tinctures and homeopathic potencies), supplemented by conventional medications when considered necessary. RESULTS: Alternatively treated patients (n = 192) had significantly less severe otoscopic findings and clinical symptom ratings at baseline than children treated in conventional centers (n = 193). Patients cared for by conventional therapists took more antibiotics (80.5% vs. 14.4%; χ²-test, p < 0.001) and analgesics (66.8% vs. 53.2%; χ²-test, p = 0.007). Times to recovery were 5.3 +/- 2.4 and 5.1 +/- 2.2 days for alternative and conventional treatment, respectively. Odds ratios (OR) with a lower limit of 1-sided 97.5% confidence interval (CI) were 0.98 (0.76), 0.95 (0.73) and 0.88 (0.69) for results adjusted to baseline otoscopy, pain and symptom scores, respectively (Cox-Mantel test). Absence from school or preschool nursery was 1.7 days in both groups; ORs (CI) were 1.00 (0.76), 0.96 (0.73) and 1.04 (0.80). Noninferiority of alternative treatment (CI limit of OR above 0.696) was not proven for pain resolution (-5.2 vs. -5.8 score points); OR (CI) were 0.87 (0.68), 1.15 (0.87) and 0.74 (0.58). Alternative treatment was judged both by doctors (Mann-Whitney estimator with 2-sided 95% CI 0.41 (0.35-0.47)) and parents (0.42 (0.36-0.48)), to be significantly better tolerated than conventional treatment. CONCLUSIONS: In primary care management of uncomplicated acute otitis media in childhood, an alternative treatment strategy based on the natural medicine, Otovowen may substantially reduce the use of antibiotics without disadvantage to the clinical outcome.

Bioactive diterpenoids, a new jatrophane and two ent-abietaenes, and other constituents from Euphorbia pubescens.

J Nat Prod;67(5):902-4, 2004 May. Valente C; Pedro M; Duarte A; Nascimento MS; Abreu PM; Ferreira MJ

Centro de Estudos de Ciências Farmacêuticas, Faculdade de Farmácia da Universidade de Lisboa, Avenida das Forças Armadas, 1600-083 Lisboa, Portugal

Result: A new jatrophane diterpene, pubescenol (1), known ent-abietaene lactones, helioscopinolide A (2) and B (3), and taxeraxone, 24-methylenecycloartenol, and vanillin have been isolated from Euphorbia pubescens. Diterpenes 1-3 and previously described pubescene D (4) were shown to be moderate inhibitors of the growth of MCF-7, NCI-H460, and SF-268 human tumor cell lines, whereas compounds 2 and 3 also exhibited significant antibacterial activity against Staphylococcus aureus.

Antibacterial activity of hydrolyzable tannins derived from medicinal plants against Helicobacter pylori.

Microbiol Immunol;48(4):251-61, 2004. Funatogawa K; Hayashi S; Shimomura H; Yoshida T; Hatano T; Ito H; Hirai Y

Result: Helicobacter pylori is a major etiological agent in gastrointestinal disorders. In this study, we isolated 36 polyphenols and 4 terpenoids from medicinal plants, and investigated their antibacterial activity against H. pylori in vitro. All hydrolyzable tansins tested demonstrated promising antibacterial activity against H. pylori. Monomeric hydrolyzable tannins revealed especially strong activity. Other compounds demonstrated minimal antibacterial activity with a few exceptions. A monomeric hydrolyzable tannin, Tellimagrandin I demonstrated time- and dose-dependent bactericidal activity against H. pylori in vitro. On the other hand, hydrolyzable tannins did not affect the viability of MKN-28 cells derived from human gastric epithelium. Hydrolyzable tannins, therefore, have potential as new and safe therapeutic regimens against H. pylori infection. Furthermore, we investigated effects of hydrolyzable tannins on lipid bilayer membranes. All the hydrolyzable tannins tested demonstrated dose-dependent membrane-damaging activity. However, it remains to be elucidated whether their membrane-damaging activity directly contributes to their antibacterial action.

New chromanone acids with antibacterial activity from Calophyllum brasiliense.

J Nat Prod;67(4):537-41, 2004 Apr. Cottiglia F; Dhanabal B; Sticher O; Heilmann J

Dipartimento Farmaco Chimico Tecnologico, Facoltà di Farmacia, University of Cagliari, 09124 Cagliari, Italy.

Result: Six novel chromanone acids (1-6) were isolated from the bark of Calophyllum brasiliense Cambess. Their structures were elucidated on the basis of 1D and 2D NMR experiments, as well as mass spectrometry. All compounds showed moderate to strong antibacterial activity against Bacillus cereus and Staphylococcus epidermidis, with 1 and 2 being most active. None of the compounds were cytotoxic against KB, Jurkat T, and myosarcoma cancer cells up to 20 microg/mL.

Common perilla (Perilla frutescens (L.) Britton.) as a perspective immunomodulator.

Medicina (Kaunas);40(3):220-4, 2004. Ragazinskiene O; Gailys V; Jankauskiene K; Simoniene G; Jurkstiene Kaunas Botanical Garden, Vytautas Magnus University, Z. E. Zilbero 6, 3018 Kaunas, Lithuania. o.ragazinskiene@bs.vdu.lt

Result: Common perilla (Perilla frutescens (L.) Britton.) is a new perspective annual medicinal dead-nettle family (Lamiaceae Lindl.) plant in Lithuania. Its medicinal raw material and preparations produced of it are characterised by the variety of pharmacological effects: desensitizing, antimicrobial, anti tumorous, and antioxidative. This species was introduced from the East Asia and cultivated in many European, Asian, and North American countries. The common perilla has been cultivated in Lithuania as a decorative plant in parks and squares since 1990. This plant has been introduced in the collection and exposition of medicinal plants in Kaunas Botanical Garden of Vytautas Magnus University since 1998 with the purpose to analyze biological and pharmacological properties of plants and to assess the quality and quantity of the raw herb. It would be reasonable to carry out experimental research on biological qualities and raw material of the common perilla in Lithuania in accordance with the contemporary technologies and requirements of the European Union standards.

Lakoochins A and B, new anticyclobacterial stilbene derivatives from Artocarpus lakoocha.

J Nat Prod;67(3):485-6, 2004 Mar. Puntumchai A; Kittakoop P; Rajviroongit S; Vimuttipong S; Likhitwitayawuid K; Thebtaranonth Y

Department of Chemistry, Faculty of Science, Mahidol University, Thailand.

Result: Two new stilbene derivatives, lakoochins A (1) and B (2), were isolated from the roots of Artocarpus lakoocha. The structures of 1 and 2 were elucidated by analysis of their spectral data. Lakoochins A (1) and B (2) exhibited anticyclobacterial activity with the respective MIC values of 12.5 and 50 microg/mL. While 1 was cytotoxic against the BC (breast cancer) cell line (IC50 6.1 microg/mL) but inactive (at 20 microg/mL) toward KB (naso pharyngeal carcinoma) cells, compound 2 possessed cytotoxicity against the BC and KB cell lines with IC50 values of 3.1 and 6.1 microg/mL, respectively.

Advances in the study of Allium macrostemon Bunge.

Pharmacology Section, Weifang Medical College, Weifang 261042, Shandong, China. qzhangsd@sohu.com

Advances in the study of Allium macrostemon Bunge.


Department of Chemistry, Faculty of Science, Mahidol University, Thailand.
Resumo: OBJECTIVE: To review the progress in the study of chemical ingredients, pharmacological effects and clinical application of Allium macrostemon Bunge. METHOD: Documents of experimental and clinical study on A. macrostemon in recent 10 years were consulted and summarized. RESULT: A. macrostemon had many active ingredients, pharmacology effects and wild clinical application. CONCLUSION: The results provide a rational foundation for the further development and utilization of A. macrostemon.

Advances in studies on chemical constituents of Senecio
Zhongguo Zhong Yao Za Zhi;28(2):97-100, 2003 Feb Wu B; Wu LJ.
Natural Medicine Research Lab., Shenyang Pharmaceutical University, Shenyang 110016, Liaoning, China.

Resumo: The large cosmopolitan genus Senecio, a perennial medicinal herb of the family compositae, has been utilized as an antimicrobial agent. A variety of pyrrolizidine alkaloids and furanoeremophilanes are widespread in the genus Senecio, which are responsible for the hepatotoxic and carcogenic effects. Some of them have been screened for anti-tumour activity, but their liver toxicity renders their use in chemotherapy. This article reviews the recent advances in chemical constituents, identification methods and pharmacological activities of it.

Bioactive alkyl phenols and embelin from Oxalis erythrorhiza.
J Ethnopharmacol;88(2-3):241-7, 2003 Oct. Feresin GE; Tapia A; Sortino M; Zacchini S; de Arias AR; Inchausti A; Yaluff G; Rodriguez J; Theoduloz C; Schmeda-Hirschmann G

Resumo: The benzoquinone embelin and four alkyl phenols were isolated from an Argentinean collection of Oxalis erythrorhiza. 3-Heptadecyl-5-methoxy-phenol is reported for the first time. The structures were determined by spectroscopic methods. Embelin presented inhibitory effect on methicillin-resistant Staphylococcus aureus, Escherichia coli and the dermatophytic fungi Epidermophyton floccosum, Microsporum canis, Microsporum gypseum, Trichophyton mentagrophytes and Trichophyton rubrum with MICs ranging between 50 and 100 microg/ml. Furthermore, embelin was active against Trypanosoma cruzi trypomastigotes with 100% lysis at 100 microg/ml and cytotoxicity below the trypanocidal concentration. The new alkyl phenol 3-heptadecyl-5-methoxy-phenol was active towards Leishmania amazonensis and Leishmania donovani promastigotes with 100% lysis at 100 microg/ml. The cytotoxicity (IC50) of embelin and the new alkyl phenol on human lung fibroblasts were 739 and 366 microM, respectively. The plant is used to treat heart complaints, a symptomatology related to Chagas' disease which is endemic in the San Juan Province, Argentina.

Ethnobotany and antibacterial activity of some plants used in traditional medicine of Zapotitlán de las Salinas, Puebla (México).
J Ethnopharmacol;88(2-3):181-8, 2003 Oct. Hernández T; Canales M; Avila JG; Duran A; Caballer J; Romero de Vivar A; Lira R

Resumo: The village of Zapotitlán de las Salinas is situated in the Valley of Tehuacán-Cuicatlán, Puebla, Mexico. Plant species used by the local inhabitants to treat gastrointestinal diseases were identified using ethnobotanical, ethnographic and taxonomic methods. Out of 119 interviews, 44 plant species were registered, of which the following are the most frequently used (listed in descending order): Lippia graveolens H.B. et K.; Lippia oaxacana Rob. et Greenm.; Gymnolaena oaxacana (Greenm.) Rydb.; Cordia curassavica (Jacq.) Roem. et Schult.; L. macrostemon Bunge. METHOD: Documents of experimental and clinical study on A. macrostemon in recent 10 years were consulted and summarized. RESULT: A. macrostemon had many active ingredients, pharmacology effects and wild clinical application. CONCLUSION: The results provide a rational foundation for the further development and utilization of A. macrostemon.

Antibacterial and antifungal activity of Indonesian ethnomedical plants.
Fitoterapia;74(6):592-6, 2003 Sep. Goun E; Cunningham G; Chu D; Nguyen C; Miles D

Resumo: Methylene chloride and methanol extracts of 20 Indonesian plants with ethnomedical uses have been assessed for in vitro antibacterial and antifungal properties by disk diffusion method. Extracts of the six plants: Terminalia catappa, Swietenia mahagoni Jacq., Phyllanthus acuminatus, Ipomoea spp., Tylophora asthmatica and Hyptis brevipes demonstrated high activity in this bioassay system. These findings should stimulate the search for novel, natural product such as new antibacterial and antifungal agents.

Antibacterial and antifungal activity of Xylopia aethiopica, Monodora myristica, Zanthoxylum xanthoxyloid; des and Zanthoxylum leprieuri from Cameroon.
Fitoterapia;74(5):469-72, 2003 Jul. Tatsadjiu LN; Essia Ngang JI; Ngassoum MB; Etoa FX National High School of Agro-Industrial Science, PO Box 455, Ngaoundere, Cameroon. tatsadjiu@yahoo.fr

Resumo: The essential oils of Xylopia aethiopica, Monodora myristica, Zanthoxylum xanthoxyloides and Z. leprieuri, four Cameroonian plants used as spices in local food, showed antibacterial and antifungal activity.

Antibacterial activity of medicinal plant extracts against periodontopathic bacteria.
Phyther Res;17(6):599-604, 2003 Jun. Jauk L; Lo Bue AM; Milazzo I; Blandino G Department of Microbiological Sciences, University of Catania, Via Androne 81, 95124 Catania, Italy.

Resumo: This study was performed to evaluate the antibacterial activity of Althaea officinalis L. roots, Arnica montana L. flowers, Calendula officinalis L. flowers, Hamamelis virginiana L. leaves, Illicium verum Hook. fruits and Melissa officinalis L. leaves, against anaerobic and facultative aerobic periodontal bacteria: Porphyromonas gingivalis, Prevotella spp., Fusobacterium nucleatum, Capnocytophaga gingivalis, Veillonella parvula, Eikenella corrodenes, Peptostreptococcus micros and Actinomyces odontolyticus. The methanol extracts of H. virginiana and A. montana and, to a lesser extent, A. officinalis were shown to possess an inhibiting activity (MIC < or = 2048 mg/L) against all the species tested. In comparison, M. officinalis extracts had a lower inhibiting activity (MIC > or = 2048 mg/L) against all the tested species with the exception of Prevotella sp. Illicium verum methanol extract was not very active though it had a particular good activity against E. corrodens. The results suggest the use of the alcohol extracts of H. virginiana, A. montana and A. officinalis for topical medications in periodontal prophylactics.

Antibacterial and anti-inflammatory activities of some plants used for medicinal purposes in Kenya.
Research Centre for Plant Growth and Development, School of Botany and Zoology, University of Natal Pietermaritzburg, Private Bag
Aqueous, hexane and methanol extracts of 12 plant species, traditionally used in Kenya for treatment of ailments of infectious and/or inflammatory nature were screened for in vitro antibacterial and anti-inflammatory activities. Antibacterial activity was tested using the microdilution method against 11 Gram-positive bacteria, 9 Gram-negative bacteria and 2 fungal species. The results showed that the ethanolic PADMA 28 tinctures showed an improved inhibitory effect on the Gram-positive bacteria (MIC: 0.4-1.6/3.2% tincture or 0.4-1.6/3.2 mg herbal drug/ml). CONCLUSION: The aqueous and alcohol-based PADMA 28 preparations as well as the corresponding preparations of the European herbal drugs showed an antibacterial effect against Gram-positive bacteria in vitro. These bacteria revealed a somewhat higher sensitivity to the teas prepared from the European herbal drugs (MIC: 1.3-20.0 mg/ml) than to the aqueous preparations of PADMA 28 (MIC: 5.0-40.0 mg/ml). The better antibacterial activity of the European herbal drugs is probably based on their relatively high amount of tanning agents. On the other hand, all tested plant preparations inhibited not at all or only insufficiently the growth of the Gram-negative bacteria tested and of Candida albicans. The ethanolic PADMA 28 tinctures showed an improved inhibitory effect on the Gram-positive bacteria (MIC: 0.38-1.51% tincture or 0.38-1.51 mg PADMA 28/ml) compared with the aqueous preparations; this effect is comparable to the ethanolic titrations of the tested European herbal drugs (MIC: 0.4-1.6/3.2% tincture or 0.4-1.6/3.2 mg herbal drug/ml). CONCLUSION: All tested tea preparations and alcoholic tinctures of PADMA 28 as well as those of the selected European herbal drugs exhibited evident antibacterial effects against Gram-positive bacteria in vitro. On the other hand, except for Klebsiella pneumoniae, all Gram-negative bacteria tested and the yeast Candida albicans were insensitive against the different aqueous and alcohol-based plant extracts.

**Comparative investigation of the antimicrobial activity of PADMA 28 and selected European herbal drugs.**

Resumo: Aqueous, hexane and methanol extracts of 12 plant species, traditionally used in Kenya for treatment of ailments of infectious and/or inflammatory nature were screened for in vitro antibacterial and anti-inflammatory activities. Antibacterial activity was tested using the microdilution method against 11 Gram-positive bacteria, 9 Gram-negative bacteria and 2 fungal species. The results showed that the ethanolic PADMA 28 tinctures showed an improved inhibitory effect on the Gram-positive bacteria (MIC: 0.4-1.6/3.2% tincture or 0.4-1.6/3.2 mg herbal drug/ml). CONCLUSION: The aqueous and alcohol-based PADMA 28 preparations as well as the corresponding preparations of the European herbal drugs showed an antibacterial effect against Gram-positive bacteria in vitro. These bacteria revealed a somewhat higher sensitivity to the teas prepared from the European herbal drugs (MIC: 1.3-20.0 mg/ml) than to the aqueous preparations of PADMA 28 (MIC: 5.0-40.0 mg/ml). The better antibacterial activity of the European herbal drugs is probably based on their relatively high amount of tanning agents. On the other hand, all tested plant preparations inhibited not at all or only insufficiently the growth of the Gram-negative bacteria tested and of Candida albicans. The ethanolic PADMA 28 tinctures showed an improved inhibitory effect on the Gram-positive bacteria (MIC: 0.38-1.51% tincture or 0.38-1.51 mg PADMA 28/ml) compared with the aqueous preparations; this effect is comparable to the ethanolic titrations of the tested European herbal drugs (MIC: 0.4-1.6/3.2% tincture or 0.4-1.6/3.2 mg herbal drug/ml). CONCLUSION: All tested tea preparations and alcoholic tinctures of PADMA 28 as well as those of the selected European herbal drugs exhibited evident antibacterial effects against Gram-positive bacteria in vitro. On the other hand, except for Klebsiella pneumoniae, all Gram-negative bacteria tested and the yeast Candida albicans were insensitive against the different aqueous and alcohol-based plant extracts.

**Antimicrobial activities of naphthazarins from Arenea euchroma.**

J Nat Prod;65(12):1857-62, 2002 Dec. Shen CC; Syu WJ; Li SY; Lin CH; Lee GH; Sun CM National Research Institute of Chinese Medicine, Taipei 112, Taiwan.

Resumo: Bioassay-directed fractionation of extract of Arenea euchroma led to the isolation of alkanin (1), shikonin (2), and their derivatives (3-8) as the active principles against methillin-resistant Staphylococcus aureus (MRSA) and vancomycin-resistant enterococci (VRE). The stereochemistry of alpha-methylbutyryl alkanin (8) is revealed for the first time, and the antimicrobial activity of 8 was compared with its corresponding diastereomer (9). The derivatives 3-9 showed stronger anti-MRSA activity [minimum inhibitory concentrations (MICs) ranged from 1.56 to 3.13 microg/mL] than alkanin or shikonin (MIC = 6.25 microg/mL). Anti-MRSA activity of derivatives was bactericidal with minimum bactericidal concentration (MBC)/MIC ≤ 2. In a time-kill assay, the bactericidal activity against MRSA was achieved as rapidly as 2 h. The derivatives 3-9 were also active against vancomycin-resistant Enterococcus faecium (F935) and vancomycin-resistant Enterococcus faecalis (CUK-17) with MICs similar to those with MRSA. Aromatic ester derivatives were also synthesized for antimicrobial activity comparison. None of these compounds were active against Gram-negative bacteria tested. Their cytotoxicity was also evaluated on selected cancer cell lines, and they expressed their activity in the range 0.6-5.4 microg/mL (CD50). Our results indicate that the ester derivatives of alkanin are potential candidates of anti-MRSA and anti-VRE agents with antitumor activity.

**Screening of some indigenous Qatari medicinal plants for antimicrobial activity.**


Resumo: OBJECTIVE: PADMA 28 is a multicomponent preparation of 20 herbs, calcium sulphate, and camphor, derived from Tibetan medicine. It is usually used in the treatment of peripheral circulatory disorders, accompanied by the symptoms tingling, formation, heaviness and tenseness in arms and legs, numbness in hands and feet, and cramps in the calf. Recently, the question of whether appropriate preparations of PADMA 28 also exhibit antibacterial and antymycotic activity has often been raised. As there are as yet no experimental findings that answer this question, an in vitro study was carried out. In a parallel survey we investigated the antimicrobial properties of 5 herbal drugs which are commonly used in the traditional European folk medicine for the topical treatment of mild skin infections, wounds and eczematous skin lesions. METHODS: The minimum inhibitory concentrations (MIC) and the minimum bactericidal concentrations (MBC) of alcohol-based (tinctures) and aqueous (teas) herbal drug prepa...
were obtained from authentic seed suppliers. Their n-hexane, dichloromethane and methanol extracts were assessed for antibacterial activity against 11 pathogenic bacterial species. Methanol extracts of 11 plant species showed significant antibacterial activity. Malva moschata and Prunus padus were active against five bacterial species, Reseda lutea against four, Centaurium erythraea and Crithmum maritimum against three, Calluna vulgaris against two, and Armeria maritima, Centaurea scabiosa, Daucus carota, Rosa canina and Stellaria holostea against one bacterial species. C. erythraea and P. padus were also active against methicillin resistant Staphylococcus aureus.

Studies on essential oils: part 10; antibacterial activity of volatile oils of some spices.
Phytother Res;16(7):680-2, 2002 Nov. Singh G; Kapoor IP; Pandey SK; Singh UK; Singh RK Chemistry Department, DDU Gorakhpur University, Gorakhpur - 273009, India. gsingh4us@yahoo.com

Resumo: The essential oils extracted from the seeds of seven spices, Anethum graveolens, Carum capticum, Coriandrum sativum, Cuminum cyminum, Foeniculum vulgare, Pimpinella anisum and Seseli indicum have been studied for antibacterial activity against eight pathogenic bacteria, causing infections in the human body. It has been found that the oil of C. capticum is very effective against all tested bacteria. The oil of C. cyminum and A. graveolens also gave similar results. These oils are equally or more effective when compared with standard antibiotics, at a very low concentration.

Antimicrobial activity of Bridelia ferruginea leaves extracts.
Fitoterapia;73(4):343-5, 2002 Jul. Talla E; Djamen D; Djouldé D; Tatsadjeu L; Tantoh D; Mbafor JT; Department of Chemistry, Faculty of Science, University of Ngaoundéré B.P.454, Ngaoundéré, Cameroun.

Resumo: Methanol, ethyl acetate, and hexane extracts of Bridelia ferruginea leaves exhibited significant activity against Pseudomonas aeruginosa, Bacillus subtilis, Echerichia coli, Staphylococcus aureus and Streptococcus faecalis.

Biologically active steroidal glycosides from Tribulus terrestris.
Pharmazie;57(7):491-3, 2002 Jul. Bedir E; Khan IA; Walker LA

Resumo: The steroidal saponin constituents obtained from Tribulus terrestris were tested for their antimicrobial and cytotoxic effects. The spirostanol-based steroidal saponins 1-3 exhibited remarkable activity against fungal organisms (Candida albicans and Cryptococcus neoformans) and cancer cell lines [human malignant melanoma (SK-MEL), human oral epidermoid carcinoma (KB), human breast ductal carcinoma (BT-549), and human ovary carcinoma (SK-OV-3)], while none of the compounds possessing the furostanol framework 4-7 showed activity. The most active spirostanol glycoside, compound 3 exhibited a broad range of anticancer activity against cell lines, SK-MEL, KB, BT-549 and SK-OV-3 at IC50s of 6.0, 7.0, 6.0 and 8.2 micrograms/ml, respectively, while compounds 1 and 2 showed selective cytotoxicity against SK-MEL at 6.7 and 9.1 micrograms/ml, respectively. The minimum inhibitory concentrations (MIC) in antifungal bioassay for compounds 1-3 varied from 1.5 to 6.2 micrograms/ml, which prompted to conclude certain structural features are required for these bioactivities.

Bioactive abietane and seco-abietane diterpenoids from Salvia prionitis.
J Nat Prod;65(7):1016-20, 2002 Jul. Chen X; Ding J; Ye YM; Zhang JS

Shanghai Institute of Materia Medica, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, 294 Tai-Yuan Road, Shanghai 200031, People's Republic of China

Resumo: From the roots of Salvia prionitis a new tricyclic diterpene, saprirearine (1), a new anhydride-type compound, saprionide (2), a new 7,8-seco-abietane diterpene derivative, 7,8-seco-para-ferruginone (3), and two new 4,5-seco-5,10-friedo-abietane diterpenoids, 4-hydroxyaporthoquinone (4) and 3-keto-4-hydroxyaporthoquinone (5), were isolated. Their structures were established by spectroscopic methods and chemical transformation. Compound 3 showed antimicrobial activities against two Gram-positive organisms, Staphylococcus aureus and Micrococcus luteus, with MIC values of 20.0 and 15.0 microM, respectively. Compound 4 showed significant inhibition against topoisomerase Iota with an IC50 value of 0.8 microM. Compound 5 exhibited cytotoxic activities against HL-60 human leukemia and the SGC-7901 and MKN-28 stomach cancer cell lines, with IC50 values of 4.6, 0.2, and 0.3 microM, respectively.