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Efficacy Evaluation of Antibacterial Agents - Anisha Pargal 2000-12-01

Antibacterial Efficacy of Several Surgical Hand Preparation Products

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Used by Veterinary Students - Po-Yen Chou 2017

Objective: To compare antibacterial efficacy of various surgical hand preparation protocols used by veterinary students. **Study Design:** Prospective, randomized, controlled study. **Study Population:** Forty-five third-year veterinary students **Methods:** The participants were randomly assigned to the following groups for hand preparation product and time combinations: non-abrasive hand scrub method with 4% chlorhexidine gluconate (CH); hand rub with a mixture of 30% 1-propanol and 45% 2-propanol solution (MPS); hand rub with 70% 2-propanol solution (IPS); or hand rub with 61% ethanol solution and 1% chlorhexidine gluconate (ES/CH). Each of these four groups was subdivided into three

conditions, based on contact time: 1.5 min, 3 min, or 5 min. There were thus 12 conditions overall. Each of the 45 participants was randomly assigned to four groups in turn. Antibacterial efficacy was assessed by comparing bacterial reduction and culture rate of gram-positive, gram-negative, coagulase positive *Staphylococcus* spp. and spore-forming bacteria after surgical hand preparation and after the students had performed surgery. Log reductions of total bacteria colonyforming units (CFU/ml) were compared using multivariate analysis of variance. The culture rates were compared using multivariate logistic regression. **Results:** Immediately after surgical hand preparation, CH and ES/CH provided significantly greater bacterial count (logCFU) reduction,

and lower positive culture rates for gram-positive and spore-forming bacteria, compared with MPS and IPS (P

Evaluation of Surface Morphology, Antibacterial Efficacy and Biocompatibility of Dental Cements in Simulated Oral Environment - Silvia

I. Gallegos Alvarez 2019

Dental cements were used in conventional crown restorations for many decades before being utilized in cement-retained restorations in order to make a connection between the implant body and the crown.

Cementation is the preferred restoration method because it eliminates unaesthetic components, aids in the obtainment of correct loading characteristics, and is usually less expensive than screw-retained counterparts. However, the

use of dental cements has been a constant source of apprehension due to multiple reports indicating in vitro and in vivo cytotoxicity, and their ability to be contaminated by the oral microbiota. Because of this, residual dental cement is listed as a risk factor for peri-implant disease by the American Academy of Periodontology. Furthermore, since there is not a standard guiding dental cement selection, many clinicians approach it in a subjective manner. It has been established that cement selection is done base on preference, ease of use, and current trends on conventional restorations. Cement selection is further complicated by the lack of cements manufactured specifically for implant restorations. Current approaches for dental cement

selection could, therefore, neglect the use of cement compositions that could aid in the success of the restoration. The goal of this study was to evaluate the biocompatibility and antimicrobial effects of various commercial dental cements in order to emphasize the impact dental cement composition can have in the oral environment.

Antimicrobial Materials for Biomedical Applications - Abraham J Domb 2019-08-02

With the need to combat emerging infectious diseases, research around antimicrobial biomaterials and their applications is booming. This book provides the field with a much-needed fundamental overview of the science, addressing the chemistry of a broad range of biomaterial types, and their applications in the biomedical

industry. Materials covered include polymers, from those with inherent antimicrobial activity to those that release antimicrobial agents, antimicrobial ceramics and inorganic compounds, such as metal based antimicrobial additives, and the developing field of biomimetic materials, are discussed. Surfaces, coatings and adhesives are covered, whilst the applications of these antimicrobial materials in biomedical applications, from catheters to orthopaedics, dentistry to ophthalmology, are explored. Edited by international leaders and with contributions from the best in the field, this book is the go-to resource for graduates and researchers in biomaterials science, biomedical engineering, chemical engineering, and materials and

polymer chemistry.

Evaluation of the Antibacterial Activity of Selected Biocides Used in Aqueous Metalworking Fluids - Archie C. Robinson 1984

Antibacterial Efficacy of 0.12-percent and 2.0-percent Chlorhexidine Gluconate at 37° C and 46° C Against Enterococcus Faecalis - Craig B. D. Thiessen 2010

The purpose of this study was to investigate the antibacterial efficacy of 0.12-percent and 2.0-percent chlorhexidine gluconate (CHX) on eliminating *Enterococcus faecalis* from dentinal tubules, and whether this antibacterial effect was enhanced by heat. To date there have been no published articles that describe the heating of 2.0-percent CHX and its antimicrobial efficacy

and clinical relevance towards *E. faecalis* within dentinal tubules in root canal systems. Ninety-five human extracted, single rooted, maxillary, anterior teeth were used to prepare dentin disk specimens. After proper sterilization, a 2.5-mm ISO-sized diameter lumen was prepared, and then the canals were filled with brain-heart infusion (BHI) broth infected with *E. faecalis*. The BHI was removed and the specimens in equally divided groups were rinsed with sterile saline and filled with saline, or 0.12 percent CHX or 2.0 percent CHX at ambient temperature (24°C) or experimental temperature (46°C) and incubated at oral temperature (37°C) or the experimental temperature (46°C), respectively. The specimens were frozen to -70°C and pulverized in liquid nitrogen. Serial dilutions

were prepared of 1:100 and 1:1000 and spiral plated on BHI agar plates in duplicate. They were incubated, and the number of bacterial colonies was recorded 24 hours later for data analysis. A two-way analysis of variance (ANOVA), with factors for solution, solution temperature, and the solution-by-temperature interaction was used to determine antibacterial efficacy. Pair-wise comparisons between groups were examined for significance using the Fisher's Protected Least Significant Differences Method. The *E. faecalis* CFU were log-transformed to satisfy the assumptions required for the ANOVA. The results of this investigation demonstrated no statistically significant difference with the addition of heat to either test irrigation solution regarding

the elimination of *E. faecalis* from dentinal tubules within the root canal system. There was a statistically significant difference in the antibacterial efficacy of CHX against *E. faecalis* in comparison with the concentration tested. A higher concentration of 2.0-percent CHX demonstrated a significantly higher antibacterial efficacy against *E. faecalis* compared with 0.12-percent CHX, and likewise with the saline control. It can be concluded that the use of a higher concentration of 2.0-percent CHX is advantageous as a final irrigation solution after copious amounts of NaOCl and EDTA have been utilized for effective antimicrobial efficacy and substantivity.

Evaluation of the Antibacterial Activity of a New Mouthwash (SWISSA)

and Its Toxicity on Fibroblasts in Vitro - Ada C. Goldsmith 1997

Textiles -- Determination of Antibacterial Activity of Textile Products - International Organization for Standardization 2021

"This document specifies quantitative test methods to determine the antibacterial activity of all antibacterial textile products including nonwovens. This document is applicable to all textile products, including cloth, wadding, thread and material for clothing, bedclothes, home furnishings and miscellaneous goods, regardless of the type of antibacterial agent used (organic, inorganic, natural or man-made) or the method of application (built-in, after-treatment or grafting). This document covers three inoculation

methods for the determination of antibacterial activity: a) absorption method (an evaluation method in which the test bacterial suspension is inoculated directly onto specimens); b) transfer method (an evaluation method in which test bacteria are placed on an agar plate and transferred onto specimens); c) printing method (an evaluation method in which test bacteria are placed on a filter and printed onto specimens)."--Scope.

Zinc-based Additives for Biofouling and MIC Protection - Paige Dodge 2019
Microbiologically influenced corrosion (MIC) and biofouling both begin with an initial layer of bacteria accumulating on a hard surface exposed to the natural environment. These bacteria quickly form a biofilm which becomes the

feeding source for marine life fouling and the root of both of these highly damaging, expensive types of corrosion. Preventative methods for biofilm development is an ongoing field of study due to critical necessity in many industries including healthcare, aerospace, and oil and gas. Today, biofilm inhibitors for the oil and gas industry may include regular cleaning or scraping of the affected surface, electrochemical processes, or biocide injections which have a negative impact on the environment and provide only temporary relief from MIC. This constant need for MIC and fouling remediation creates a great demand and thus market potential for long-term, more environmentally conscious methods to mitigate and control biofilm development. This study

investigates the incorporation of well-known biocidal materials as well as one commercial additive into the fabrication process of underwater structures and surfaces. High Density Polyethylene (HDPE) and fiber reinforced plastic (FRP) with antimicrobial additive were processed. Experiments were conducted per ASTM E2149-13a and F895 to evaluate antibacterial efficacy in the laboratory. Field tests were constructed per ASTM D3623 - 78a for material evaluation in offshore fouling conditions. The manufactured materials were tested against gram-positive and gram-negative bacteria, and fouling microorganisms to analyze the effectiveness of biofilm prevention. Results showed positive efficacy of biocidal additives incorporated through the fabrication

process in all cases including copper, multiple forms of zinc, and titanium dioxide. The commercially available additive produced the largest zone of inhibition and highest reduction of colony forming units in dynamic flow conditions. Fouling tests show that the incorporation of the additive into HDPE and FRP provides a surface protection and thus serves as an agent for material preservation. Results from this study demonstrate innovative and effective methods for surface protection from MIC and biofouling by incorporating antimicrobial additives into the structural matrix during the manufacturing process.

Evaluation of Antibacterial Activity of Plant-food By-products and Their Potential Application in Livestock

Animals - Minping Zhang 2020

Antibacterial Efficacy of 2% Chlorhexidine with Ultrasound Activation in the Root Canals of Necrotic Human Mandibular Molars -

Zachary Andrew Trux Imperial 2008
Abstract: The use of ultrasound as an adjunct to conventional instrumentation procedures has been suggested to enhance the removal of bacteria and necrotic debris from infected root canals. The purpose of this in vivo, prospective, repeated-measures study was to evaluate the antibacterial efficacy, by means of microbial culture method, of a hand and rotary instrumentation technique plus one-minute of 15 mL/minute 6% NaOCl, and 30 seconds 15 mL/min 2% Chlorhexidine via ultrasonic irrigation using an ultrasonic

irrigating needle connected to a MiniEndo™ piezoelectric ultrasonic system in the mesial roots of infected, necrotic, human mandibular molars. Thirty-five subjects participated in this study. Each experimental subject had four bacterial samples drawn during treatment. The canals were sampled prior to treatment (sample S1), after hand and rotary instrumentation (sample S2), after ultrasonic irrigation with 30 mL 6% NaOCl (sample S3), and after ultrasonic irrigation with 15 mL 2% Chlorhexidine (sample S4). The samples were incubated anaerobically for 7 days at 37°C. The bacteria from each sample were quantified, and the mean and median CFU count and log₁₀ CFU count were used for statistical analysis.

Silver in Healthcare - Alan B. G. Lansdown 2010

Silver in healthcare has many different facets and since the early concepts of microbiology of the 1880's, has been developed from usage in surgical clips, staples, foil wound dressings and surgical implants, to the widespread and clinically effective antiseptic wound dressings, sutures, catheters, bone and dental implants, and cardiovascular devices of today. From the dawn of human civilisation, silver has had a role of water purification and even now has a role in hospital water systems for control of MRSA and legionnaires disease. Biotechnological advances in recent years have extended the antimicrobial properties of silver into production of hygiene textiles and use in

domestic products. Important advances have been made in understanding mechanisms of antimicrobial action of silver, the central importance of ionisation patterns in the presence of body fluids and secretion, and the genetical and molecular profiles of silver resistance. This publication is a comprehensive account of the history of silver in medicine, its clinical benefits and wide advantages as a broad spectrum antimicrobial agent. It is clear from the extensive array of publications in recognised and unofficial press, that many misconceptions and misleading conceptions have been perpetuated, leading to errors in evaluation of the safety of the metal in occupational, domestic and therapeutic situations. The book is unique in that it is the only

comprehensive presentation of the toxicology of silver and it identifies the major misconceptions in the safety of silver and interpretation of argyria and argyrosis as central features of silver toxicity. In this book, Dr Lansdown reviews the literature from a clinical and experimental viewpoint, with the benefit of his many years research on silver and experience gained in working with clinicians, healthcare product manufacturers and microbiologists. There is also discussion in the book on the relevance of antimicrobial resistance to silver and deficiencies in present day clinical practice in not evaluating incidences of resistance on a routine basis. The subject matter is presented in a readable fashion and includes

reference to use of the metal in such practices as acupuncture and treatment of tropical diseases as practised in some parts of the world, each of which is accompanied by special clinical risk. It is also a collation of current views on the use and efficacy of silver as a broad spectrum antibiotic. The chapters which deal specifically with toxicological aspects of silver in clinical, occupational and environmental issues are central to the book's value. The book is aimed at clinicians, research scientists and product manufacturers and will provide ideas for new research and academic endeavour. It is also essential reading for research students with an interest in metal toxicity and its management in mammalian tissues.

Science and Technology Against Microbial Pathogens - A. Méndez-Vilas 2011

Antimicrobial susceptibility profile and effect of stem bark extracts of *Curtisia dentata* on multi-drug resistant verotoxic *Escherichia coli* and *Acinetobacter* spp. isolates obtained from water and wastewater samples / Hamuel James Doughari [und weitere]. Antimicrobial utilization in intensive care units of a private tertiary care hospital / Pramil Tiwari, Vani Yadav and Shilpi Singh. Bacterial clearance from blood in mice infected by *S. pneumoniae* (penicillin MIC = 16 ug/ml) presenting specific IgG (non-protective levels) and treated with sub-therapeutic regimens of cefditoren (a highly bound cephalosporin) / Fabio Cafini [und

weitere]. Characterisation of methicillin resistant Staphylococcus aureus isolates from hospitalised patients / Vladimir Kmet, Daniela Ohlasova and Milan Niks. Characterization of methicillin-resistant coagulase-negative Staphylococci isolates from blood cultures in a Brazilian University Hospital / Valeria Cataneli Pereira and Maria de Lourdes Ribeiro de Souza da Cunha. Control of bacterial contamination in boar semen doses / J.M. Morrell and Margareta Wallgren. Diffusion of extended-spectrum B-lactamase producing Enterobacter cloacae in a kidney transplantation unit / S. Hammami [und weitere]. Effect of antifungal agents on non-Candida albicans Candida species enzymatic activity / M. Negri [und weitere]. Effect of chitosan, nisin

and storage time on the growth of Listeria innocua and Shewanella putrefaciens in fish homogenates / L.I. Schelegueda, M.F. Gliemmo and C.A. Campos. ESBL-producing Enterobacteriaceae in the northern Portugal - antimicrobial susceptibility and molecular epidemiology / R. Fernandes and C. Prudencio. Observations on the antimicrobial susceptibility of Staphylococcus pseudintermedius following the introduction of cefovecin for clinical use in Europe / Y. Chaudhry, A. Robinson and K.S. Godinho. Oxacillin resistance among Staphylococcus aureus isolated from peritoneal dialysis related peritonitis / C.H. Camargo [und weitere]. Resistance detection and susceptibility profile in Staphylococcus spp. isolated from

patients with urinary tract infection (UTI) / Adriano Martison Ferreira [und weitere]. Resistance distribution profile of MBL, ESBL and multidrug resistant Gram negatives isolated at a tertiary care hospital in India / K.H. Bhutada and V.R.

Shende

Evaluation of the Effectiveness and Durability of Antibacterial Finishes on Textiles - Ellen Kay Henry 1966

The Efficacy Of Herbal Mixtures On Some Bacteria. Staphylococcus aureus and Streptococcus pyogene - Bamidele Ijigbade 2023-01-26

Project Report from the year 2023 in the subject Biology - Micro- and Molecular Biology, grade: 4.27, University Of Abuja (FACULTY OF SCIENCE), course: MICROBIOLOGY, language: English, abstract: This

study is on the efficacy of herbal mixtures on some selected bacteria, Staphylococcus aureus and Streptococcus pyogene was conducted. The zone diameter of inhibition in millimeter of Aqueous extracts of herbal mixture at concentration of 500 mg/ml against Staphylococcus aureus shows that Herbal mixture met the standard of the antibiotic used as the positive control (Chloramphenicol) with 25.0 ± 1.0 mm each. Meanwhile Streptococcus pyogene had significant zone diameter of inhibition (24mm against the herbal mixtures) at concentration of 500mg/ml. The extracts of the herbal mixture had the minimum inhibition concentration (MIC) of 200 mg/ml against Staphylococcus aureus and which correlate with the control (Chloramphenicol), while the MIC of

400 mg/ml against Streptococcus pyogene respectively. The Minimum bactericidal concentration of the extracts shows that the herbal mixtures have the least value of 400 mg/ml which correlates with the standard antibiotic (Chloramphenicol) used as control against Streptococcus pyogene. The Herbal mixture had MBC of 400 mg/ml which also correlates with the standard antibiotics drug (Chloramphenicol).

The Design, Synthesis, and I_n_V_i_t_r_o_Evaluation for Antibacterial Activity of 3-acyl-n, N'-diphenylureas and 5-alkyl-and 5-acyl-2-hydroxybenzenesulfonamides - Mark J. Macielag 1984

An Experimental Text Book on Phytochemical Analysis and Antimicrobial Activity of Mentha

Piperita - Naveen Gaurav 2016-05-20
Mentha (also known as mint, from Greek míntha (Palaeolexicon) is a genus of plants in the family Lamiaceae (mint family) (Harley et al., 2004). The species are not clearly distinct and estimates of the number of species varies (Bunsawat et al., 2004). Hybridization between some of the species occurs naturally. Many other hybrids, as well as numerous cultivars, are known in cultivation. The genus has a subcosmopolitan distribution across Europe, Africa, Asia, Australia, and North America (Brickell et al., 1997). Mints are aromatic, almost exclusively perennial, rarely annual, herbs. They have wide-spreading underground and overground stolons and erect, square (Rose, Francis, 1981) branched stems. The leaves are

arranged in opposite pairs, from oblong to lanceolate, often downy, and with aserrated margin. Leaf colors range from dark green and gray - green to purple, blue, and sometimes pale yellow. The flowers are white to purple and produced in false whorls called verticillasters. Antibacterial activity of the flower extracts of Caesalpinia pulcherrima L. against eye infection causing pathogens - Prem Jose Vazhacharickal 2017-12

Caesalpinia pulcherrima flowers have excellent antibacterial property. The present study aims to evaluate the antibacterial property Caesalpinia pulcherrima flower extract against clinically isolated eye infection causing Staphylococcus aureus. The (MIC) minimum inhibitory concentration and (MBC) minimum

bactericidal concentration was found to be 200 µg/ml and 400 µg/ml. Antioxidant activity, spectroscopic and phytochemical analysis of the extract was also studied. This study concludes that Caesalpinia pulcherrima can be used as a potential natural remedy to treat eye infection.

In Vivo Evaluation of the Antibacterial Activity of Chlorhexidine, Calcium Hydroxide and Iodine Potassium Iodide as Intra-canal Medicaments - Farid Hassan Mohammed Hassan 2003

Synthesis and Evaluation of Antibacterial Activity of the Dual-action Agents - Danni Wang 2001

Russell, Hugo & Ayliffe's Principles and Practice of Disinfection,

Preservation and Sterilization - Adam P. Fraiese 2008-04-15

Highly respected, established text – a definitive reference in its field – covering in detail many methods of the elimination or prevention of microbial growth "highly recommended to hospital and research personnel, especially to clinical microbiologists, infection control and environmental-safety specialists, pharmacists, and dieticians." New England Journal of Medicine WHY BUY THIS BOOK? Completely revised and updated to reflect the rapid pace of change in this area Updated material on new and emerging technologies, focusing on special problems in hospitals, dentistry and pharmaceutical practice Gives practical advise on problems of disinfection and antiseptics in

hospitals Discusses increasing problems of natural and acquired resistance to antibiotics New contributors give a fresh approach to the subject and ensure international coverage Systematic review of sterilization methods, with uses and advantages outlined for each Evaluation of disinfectants and their mechanisms of action

WHO Guidelines on Hand Hygiene in Health Care - World Health Organization 2009

The WHO Guidelines on Hand Hygiene in Health Care provide health-care workers (HCWs), hospital administrators and health authorities with a thorough review of evidence on hand hygiene in health care and specific recommendations to improve practices and reduce transmission of pathogenic microorganisms to patients

and HCWs. The present Guidelines are intended to be implemented in any situation in which health care is delivered either to a patient or to a specific group in a population. Therefore, this concept applies to all settings where health care is permanently or occasionally performed, such as home care by birth attendants. Definitions of health-care settings are proposed in Appendix 1. These Guidelines and the associated WHO Multimodal Hand Hygiene Improvement Strategy and an Implementation Toolkit (<http://www.who.int/gpsc/en/>) are designed to offer health-care facilities in Member States a conceptual framework and practical tools for the application of recommendations in practice at the bedside. While ensuring consistency

with the Guidelines recommendations, individual adaptation according to local regulations, settings, needs, and resources is desirable. This extensive review includes in one document sufficient technical information to support training materials and help plan implementation strategies. The document comprises six parts. **BS EN ISO 3990. Dentistry. Evaluation of Antibacterial Activity of Dental Restorative Materials, Luting Cements, Fissure Sealants and Orthodontic Bonding Or Luting Materials** - British Standards Institution 2022

Design, Synthesis and Biological Evaluation of Antibacterial Peptides Derived from Lactoferricin and Porphyrin - Dhiren Satish Dunraj 2013

Pseudomonas aeruginosa is a commonly occurring opportunistic pathogen with the capacity to form biofilms. Pathogenic bacteria such as *Pseudomonas aeruginosa* have been known to develop bacterial resistance. Therefore new compounds are required to address this problem; antimicrobial peptides have been identified as a potential solution. The bioactive peptide lactoferricin has known activity against *Pseudomonas aeruginosa* but suffers from a number of drawbacks including metabolic instability and possible development of resistance. To address these issues, this thesis describes four strategies of peptide-design; namely incorporation of non-protein amino acids, truncation with novel C-terminal modifications, tetrabranching and conjugation to

porphyrin. It was a necessity that the synthesized compounds incorporating these modifications were able to exhibit sufficient antimicrobial activity. Porphyrin-peptide conjugates were synthesized for their potentially novel antibacterial mechanism of action via intrinsic haem-uptake pathways. Both solid and solution phase synthetic strategies were explored for the porphyrin-peptide conjugates, with the solid phase strategy giving superior results. All successful analogues, were biologically evaluated by agar diffusion and MIC assays. The results of this have demonstrated that the incorporation of the non-protein amino acid, 3-aminobenzoic acid, resulted in loss of antibacterial activity of the original sequence; rendering any

potential improvements on metabolic stability futile. Conversely, all other structural modifications demonstrated promising MIC values against *Pseudomonas aeruginosa* verifying these compounds as potent antimicrobials. Those showing promising antimicrobial activity render themselves as future candidates for evaluation of their enhanced therapeutic potential including analysis of metabolic stability. A potentially novel finding was the observation of antimicrobial activity of porphyrin-peptide conjugates in the absence of applied light. Porphyrin compounds which have shown antibacterial activity in the literature act exclusively through photodynamic mechanisms which have a requirement of an applied source of irradiation.

The porphyrin-peptides in this study show retention of antimicrobial activity which is either due solely to antimicrobial peptide sequence by itself or possibly due to a mechanism related to the manipulation of haem-uptake pathways. At present, no explicit declaration of such mechanisms of action can be made. The promising antibacterial activity displayed by the series of novel compounds proposes further evaluation with potential to address the universal issue of bacterial resistance development.

GB/T 20944.3-2008: Translated English of Chinese Standard. (GBT 20944.3-2008, GB/T20944.3-2008, GBT20944.3-2008) -

<https://www.chinesestandard.net>
2020-08-02

[After payment, write to & get a

FREE-of-charge, unprotected true-PDF from: Sales@ChineseStandard.net] This Part of GB/T 20944 specifies quantitative test and evaluation method for determining the antibacterial properties of textiles by the shake flask method. This Part is applicable to various textile products such as down, fiber, yarn, fabric, and products with special shapes, especially applicable to nondissolvable antibacterial textile products. This Part does not involve the evaluation of the safety of antibacterial products.

A Manometric Evaluation of Bacteriostatic Activity - Eunice R. Bonow 1952

Evaluation of the Antibacterial Activity of Newly-Synthesized Substituted 4 -oxo - Thiazolidine

Compounds - Salamah Hamdan Al-Masaeed 2000

Evaluation of Compounds for Antibacterial Activity Against Spoilage Bacteria Inoculated on Rainbow Trout Tissue [microform] - Deena Marie Howdle 2004

GB/T 20944.2-2007: Translated English of Chinese Standard (GBT20944.2-2007) - <https://www.chinesestandard.net> 2021-07-30

[After payment, write to & get a FREE-of-charge, unprotected true-PDF from: Sales@ChineseStandard.net] This part of GB/T 20944 specifies the quantitative test and evaluation method, for the determination of the antibacterial activity of textiles, by the absorption method. This part applies to various textile products,

such as down, fibers, yarns, fabrics and their products. This part does not involve the evaluation of the safety of antibacterial products. *Antibacterial Efficacy and Biological Evaluation of High-valence Silver Material* - □□□ 2016

Green Synthesis of Silver Nanoparticles using Stingless bee (*Trigona iridipennis* Smith) honey and evaluation of their antibacterial activity - Prem Jose Vazhacharickal
Nanotechnology is an emerging field of science. It has increased applications in diverse area for the development of new materials at nanoscale levels. Synthesis of nanoparticles using biological methods is referred as greener synthesis of nanoparticles. Green synthesis provides advancement over

chemical and physical method as it is cost effective, environment friendly, and safe for human therapeutic use. Stingless bees are highly social (eusocial) insects which populated the tropical earth 65 million years ago longer than honey bees. Among the most common uses of stingless bee honey are to treat stomach disturbance, cough, tonsillitis, sore throat, stomach and intestinal ulcers, cold, disease of the mouth, mucus membrane, and as a wound dressing due to its antimicrobial activity. Stingless bees honey were used to for the green synthesis of silver nanoparticles. Antimicrobial activity of the green synthesised nanoparticles were tested used agar diffusion method against *Escherichia coli* (*E. coli*), *Pseudomonas aeruginosa*, *Staphylococcus aureus*,

Salmonella typhi and Klebsiella pneumoniae. The results showed that stingless bee honey could be effectively used for the synthesis of silver nanoparticle. The synthesized silver nanoparticles shows antibacterial activity on both Gram positive and Gram negative bacteria. This biosynthesis of nanoparticles is cost efficient, pollutant free and simpler to synthesize.

Spices Act as a Natural Antimicrobial in Chicken Meat System - Shekhar Badhe 2013

Consumers generally preferred fresh meat without refrigeration. In addition, considering the prevailing conditions at the retail outlets, contamination of the meat with microbes appears unavoidable. Hence, high bacterial load is expected in the meat sold at the retail outlets

mainly due to lack of awareness towards hygienic conditions and poor infrastructure in the retail outlets. Hence, practices such as incorporation of antibiotics, chemical preservatives, antimicrobial compounds have been tried. Increasing incidences of some pathogens connected to food borne illness acquiring antibiotic resistance has been a worry. This perspective has put pressure on the food industry for progressive removal of chemical preservatives and adoption of natural alternatives to achieve the goal concerning microbial food safety. Herbal spices have been added to foods since ancient times, not only as flavouring agents, but also as folk medicine and food preservatives . Scarce information is available regarding their use as antimicrobial

in meat industry. Hence, this study has been designed to high light the efficacy of some of the spices as antimicrobial in chicken meat system.

Antibacterial activity of four plant species used in traditional medicine practice of South Omo Zone, Southern Ethiopia - Sintayehu Gobezie

2021-01-27

Master's Thesis from the year 2019 in the subject Biology - Micro- and Molecular Biology, grade: 4, Arba Minch University, course: Medical Microbiology, language: English, abstract: The aim of this study was to determine the antibacterial activity of crude extracts of four medicinal plants (A. pirottae, G. schweinfurthii, K. begoniifolia, and U. leptocladon), against ATCC and MDR clinical isolates of bacteria. Based on ethnobotanical data, four plants

were collected from different areas of South Omo through several field trips followed by taxonomic identification. Leaves (A. pirottae, K. begoniifolia, and U. leptocladon) and root (G. schweinfurthii) parts of plants specimens were subjected to extraction process using six different organic solvents through maceration and subsequent filtration. The resultant crude extracts were screened for primary in vitro antibacterial activity against ATCC bacterial strains, using agar well diffusion assay. The plants that showed the highest activity indices were further screened against MDR bacterial isolates. MIC was performed on the most active plant extract. Results of antibacterial activities were analyzed using statistical software, SPSS for Windows version

20. The antibacterial activity significantly varied among the plant species, type of solvents used for the extraction and strains of bacteria tested. Ethyl acetate and ethanol was highly effective for extracting antibacterial principles, irrespective of plant species. The results of primary screening revealed that two plants (*K. begoniifolia*, and *U. leptocladon*) were highly active against ATCC strains. The results of the extended screening showed that, among the two plants, ethyl acetate extract of *U. leptocladon* efficiently inhibited the growth of MDR bacterial isolates. The MIC values of *U. leptocladon* were varied in inhibiting MDR bacteria tested. The overall findings of this study demonstrated that all the four plants have antibacterial activities in varying

degrees. *U. leptocladon* showed the widest and highest spectrum of antibacterial activities as per agar well diffusion assay and analysis of MIC. However, further ongoing and in-depth studies are mandatory in order to prove and understand in vivo efficacy, mechanism of action and toxicological profile of these plants. In many regions of the world, particularly Ethiopia, the vast majority of traditional medicines are plant based. However, these plants were neglected and scarcely explored. Therefore, screening of plants used in traditional medicine could provide the chance of discovering antimicrobials that fight against infectious diseases.

Antimicrobial Properties Of Metal And Metal-Halide Nanoparticles And Their Potential Applications - Jason Robert

Torrey 2014

Heavy metals have been known to possess antimicrobial properties against bacterial, fungal, and viral pathogens. Silver and copper in particular have been used for millennia to control bacterial and fungal contamination. Metal nanoparticles (aggregations of metal atoms 1-200 nm in size) have recently become the subject of intensive study for their increased antimicrobial properties due to their increased surface area and localized release of metal ions when attached to pathogens. In the current studies, metal and metalhalide nanoparticles including silver (Ag), silver bromide (AgBr), silver iodide (AgI), and copper iodide (CuI) nanoparticles were evaluated for their antibacterial efficacy against two

common bacterial pathogens. All of the nanoparticles significantly reduced bacterial numbers within 24 hours of exposure and were more effective against the Gram-negative *Pseudomonas aeruginosa* than the Gram-positive *Staphylococcus aureus*. CuI nanoparticles were found to be highly effective, reducing both organisms by $>4.43 \log_{10}$ within 15 minutes at 60 ppm Cu. CuI nanoparticles were selected for further evaluation against a range of microorganisms to determine their broad spectrum efficacy. CuI nanoparticles formulated with different stabilizers (sodium dodecyl sulfate, SDS; PVP) were tested against representative Gram-positive and Gram-negative bacteria, *Mycobacteria*, a fungus (*Candida albicans*), and a non-enveloped virus (poliovirus). Both

nanoparticles caused significant reductions in most of the Gram-negative bacteria within five minutes of exposure ($>5.09\text{-log}_{10}$). The Gram-positive bacterial species were more sensitive to the CuI-SDS than the CuI-PVP nanoparticles. Likewise, *C. albicans* was also more sensitive to the CuI-SDS than the CuI-PVP nanoparticles. In contrast, the acid-fast *Mycobacterium smegmatis* was more resistant to the CuI-SDS than the CuI-PVP nanoparticle solutions (2.54-log_{10} vs. 3.80-log_{10} after 30 minutes). Poliovirus was more resistant than the other organisms tested except for *Mycobacterium fortuitum*. *M. fortuitum* was more resistant to both CuI nanoparticle solutions than any of the other organisms tested, requiring longer exposure times to achieve comparable

reductions ($\sim 4.15\text{ log}_{10}$ after 24 hours). As an example of a real world antimicrobial application, polymer surface coatings with embedded CuI nanoparticles were investigated to determine their potential use as self-disinfecting surfaces. Brushed polyurethane, spincoated acrylic, and powder coated polyester-epoxy coatings containing various concentrations of CuI nanoparticles were tested for antibacterial efficacy against *P. aeruginosa* and *S. aureus*. Polyester-epoxy powder coatings were superior to the other coatings in terms of uniformity and stability under moist conditions and displayed antimicrobial properties against both organisms ($>4.92\text{ log}_{10}$) after six hours at 0.25% Cu. Polyester-epoxy coatings were selected for more rigorous testing

under adverse conditions. These surfaces were negatively impacted when tested under dry conditions with high organic content, with organic content appearing to have a greater impact on antimicrobial efficacy. At 0.25% Cu, the antibacterial activity of the powder coatings was not impacted by washing with several commercial cleaners; however, at concentrations of 0.05% Cu, antibacterial activity was reduced by multiple washings with water, Windex®, and Pine Sol®. Additionally, ultrasonic cleaning of the coatings appeared to decrease their antimicrobial efficacy. Despite this, CuI nanoparticles were found in all studies to have great potential as a new class of fast-acting, broad-spectrum antimicrobial.

Functional Chitosan - Sougata Jana

2020-03-05

Thanks to their unique properties, chitosan and chitosan-based materials have numerous applications in the field of biomedicine, especially in drug delivery. This book examines biomedical applications of functional chitosan, exploring the various functions and applications in the development of chitosan-based biomaterials. It also describes the chemical structure of chitosan and discusses the relationship between their structure and functions, providing a theoretical basis for the design of biomaterials. Lastly, it reviews chemically modified and composite materials of chitin and chitosan derivatives for biomedical applications, such as tissue engineering, nanomedicine, drug delivery, and gene delivery.

Phytochemical Screening, Isolation and Antibacterial Evaluation of the Ethyl Acetate Crude Extract of the Root Bark of "Dichapetalum Madagascariense Poir" - Hannah Bilson
2023-02-20

Bachelor Thesis from the year 2019 in the subject Chemistry - Organic Chemistry, grade: 4.0 = A, University of Cape Coast, language: English, abstract: Dichapetalum madagascariense. Poir belongs to the family Dichapetalaceae. In this present study, the antibacterial activity of the ethyl acetate extract of the root was investigated by soxhlet extraction process. Agar well diffusion method was employed to evaluate antibacterial activity of extracts against Gram positive and Gram negative bacteria. The root extract was effective in causing

inhibition of some of the test bacteria. The highest and least inhibitory activities were observed against Staphylococcus aureus and Pseudomonas aeruginosa respectively, while Escherichia coli was resistant. The extract was more effective in inhibiting the growth of Staphylococcus aureus as compared to the standard antibiotic used as a positive control. The solvent for extraction, ethyl acetate, did not affect the biological activity of the crude extract.

Design, Solvent-Free Synthesis and Antibacterial Activity Evaluation of New Coumarine Sulfonamides - Farzaneh Aminarshad 2020

A simple, cost effective and green method was presented for the synthesis of coumarin bis sulfonamides. 17 novel coumarin

sulfonamides were synthesized in good to high yield and purity in six steps starting from 2-amino thiazole, aniline and 4-methoxy aniline. All of the reactions have been done under green conditions without using any hazardous solvent. Also, the antibacterial properties of the synthesized sulfonamides were investigated using two strains of Staphylococcus (gram-positive) and Escherichia coli (gram-negative) bacteria.

In Vitro Evaluation of Synthetic Peptide for Antibacterial Activity Against Staphylococcus Aureus Causing Bovine Mastitis [With CD Copy] - Jasleen kaur 2021

The in Vivo Antibacterial Efficacy of Ultrasound After Hand and Rotary Instrumentation in Human Mandibular

Molars - Keith Charles Carver 2005
Abstract: The use of ultrasound as an adjunct to conventional instrumentation procedures has been suggested to enhance the removal of bacteria and necrotic debris from infected root canals. The purpose of this in vivo, prospective, randomized, blinded study was to compare the antibacterial efficacy, by means of microbial culture methods and the specific ability to eliminate E. faecalis as measured by polymerase chain reaction (PCR), of a hand and rotary instrumentation technique versus a hand and rotary instrumentation plus one-minute ultrasound technique using an ultrasonic irrigating needle connected to a MiniEndo(TM) piezoelectric ultrasonic system in the mesial roots of infected,

necrotic, human mandibular molars. Thirty-three subjects participated in this study. Group 1 consisted of 17 mesial roots prepared with a hand and rotary instrumentation technique and conventional irrigation with 6.0% sodium hypochlorite. Group 2 consisted of 16 mesial roots prepared in a similar manner followed by 1 minute of ultrasonic irrigation with 6.0% sodium hypochlorite per canal. The canals were sampled prior to treatment, after instrumentation for both groups, and after syringe irrigation for teeth in Group 1 and after ultrasonic irrigation for teeth in Group 2. The samples were incubated anaerobically for 7 days at 37°C, the bacteria from each sample were quantified, and the CFU counts and log₁₀ CFU counts were used for

statistical analysis. Samples displaying initial growth and growth after instrumentation or ultrasonic irrigation were submitted for PCR detection of *E. faecalis*. All samples were positive for initial growth. Statistical analysis using the Exact Mann-Whitney-Wilcoxon test indicated no significant differences between Group 1 and Group 2 with regard to initial ($p = 0.385$) or post-instrumentation ($p = 0.093$) CFU counts. A dependent t-test showed hand and rotary instrumentation with 6.0% sodium hypochlorite irrigation significantly (p

Evaluation of the in Vivo and in Vitro Antibacterial Activity of Multicillin Against Urinary and Respiratory Pathogens and Comparison with Other Antibiotics - Elizabeth M. Nolan 1986