ORAL / PERIDONTAL DISEASE & NEEM

Recent Research

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Evaluation of Azadirachta indica leaf fractions for in vitro antioxidant potential and in vivo modulation of biomarkers of chemoprevention in the hamster buccal pouch carcinogenesis model.

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http://www.ncbi.nlm.nih.gov/pubmed/18442880?dopt=AbstractPlus

We evaluated the chemopreventive potential of Azadirachta indica (neem) leaf fractions based on in vitro antioxidant assays, and in vivo inhibitory effects on 7,12-dimethylbenz[a]anthracene (DMBA)-induced hamster buccal pouch (HBP) carcinogenesis. In addition we also identified the major constituents in neem leaf fractions by HPLC. Analysis of the free radical scavenging activities and reducing potential of crude ethanolic extract (CEE), ethyl acetate fraction (EAF) and methanolic fraction (MF) of neem leaf revealed a concentration-dependent increase in antioxidant potential that was in the order EAF>MF>CEE. Administration of neem leaf fractions reduced the incidence of DMBA-induced HBP carcinomas at a lower concentration compared to the crude extract. Chemoprevention by neem leaf fractions was associated with modulation of phase I and phase II xenobiotic-metabolising enzymes, lipid and protein oxidation, upregulation of antioxidant defences, inhibition of cell proliferation and angiogenesis, and induction of apoptosis. However, EAF was more effective than MF in terms of antiproliferative and antiangiogenic effects, and expression of CYP isoforms. The greater efficacy of EAF may be due to higher content of constituent phytochemicals as revealed by HPLC analysis. The results of the present study suggest that the antioxidant properties of neem leaf fractions may be responsible for modulating key hallmark capabilities of cancer cells such as cell proliferation, angiogenesis and apoptosis in the HBP carcinogenesis model.
PMID: 18442880 [PubMed - as supplied by publisher]

Singapore Dent J. 2005 Dec;27(1):1-6.

An introduction to minimum intervention dentistry.

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http://www.ncbi.nlm.nih.gov/pubmed/16438261?ordinalpos=3&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVDocSum

Minimum intervention dentistry (MI) can be defined as a philosophy of professional care concerned with the first occurrence, early detection, and earliest possible cure of disease on micro levels, followed by minimally invasive, patient-friendly treatment to repair irreversible damage caused by such disease. The benefit for patients from MI lies in better oral health through disease healing and not merely on symptom relief. Furthermore, minimally invasive treatment assists in reducing widespread patient dental anxieties. MI has the potential for dentists to apply a more conservative approach to caries treatment and simultaneously offer patients less invasive, health-oriented treatment options.
PMID: 16438261 [PubMed - indexed for MEDLINE]

Asian Pac J Cancer Prev. 2005 Oct-Dec;6(4):515-20.

Ethanolic neem (Azadirachta indica) leaf extract induces apoptosis in the hamster buccal pouch carcinogenesis model by modulation of Bcl-2, Bim, caspase 8 and caspase 3.

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Induction of apoptosis is one of the most active strategies in cancer chemoprevention and the ability of medicinal plants in this regard has attracted major research interest. The present study was designed to investigate the apoptosis inducing capacity of an ethanolic neem leaf extract (ENLE) during 7,12-dimethylbenz[a]anthracene (DMBA)-induced hamster buccal pouch carcinogenesis using the apoptosis-associated proteins Bcl-2, Bim, caspase 8 and caspase 3 as markers. Topical application of DMBA to the hamster cheek pouch for 14 weeks resulted in well developed squamous cell carcinomas associated with increased expression of Bcl-2 and decreased expression of Bim, caspase 8 and caspase 3. Administration of ENLE inhibited DMBA-induced hamster buccal pouch (HBP) carcinogenesis, as revealed by the absence of neoplasms, with induction of Bim and caspases 8 and 3 and inhibition of Bcl-2 expression. Our results suggest that the chemopreventive effects of ENLE may be mediated by induction of apoptosis.
PMID: 16436003 [PubMed - indexed for MEDLINE]

Cell Biochem Funct. 2005 Jul-Aug;23(4):229-38.

Ethanolic leaf extract of neem (Azadirachta indica) inhibits buccal pouch carcinogenesis in hamsters.

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We evaluated the chemopreventive effects of ethanolic neem leaf extract in the initiation and post-initiation phases of 7,12-dimethylbenz[a]anthracene (DMBA)-induced hamster buccal

pouch (HBP) carcinogenesis. The frequency of bone marrow micronuclei as well as the concentrations of lipid peroxides, ratio of reduced to oxidized glutathione (GSH/GSSG), and the activities of the GSH-dependent enzymes glutathione peroxidase (GPx) and glutathione-S-transferase (GST) in the buccal pouch, liver and erythrocytes were used as biomarkers of chemoprevention. All the hamsters painted with DMBA alone for 14 weeks developed buccal pouch carcinomas that showed diminished lipid peroxidation and enhanced antioxidant status associated with increased frequencies of bone marrow micronuclei. In the liver and erythrocytes of tumour-bearing animals, enhanced lipid peroxidation was accompanied by compromised antioxidant defences. Administration of ethanolic neem leaf extract effectively suppressed DMBA-induced HBP carcinogenesis as revealed by the absence of tumours in the initiation phase and reduced tumour incidence in the post-initiation phase. In addition, ethanolic neem leaf extract modulated lipid peroxidation and enhanced antioxidant status in the pouch, liver and erythrocytes and reduced the incidence of bone marrow micronuclei. The results of the present study, demonstrate that ethanolic neem leaf extract inhibits the development of DMBA-induced HBP tumours by protecting against oxidative stress.

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Int Dent J. 2004 Aug;54(4):219-23.

The effect of two different dental gels and a mouthwash on plaque and gingival scores: a six-week clinical study.

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AIM: To evaluate the clinical efficacy of two gel formulations containing chlorhexidine gluconate and neem extract with a commercially available chlorhexidine gluconate mouthwash. METHOD: An open labelled randomised six-week clinical study with parallel group design in 48 subjects divided into four groups. Plaque accumulation and gingival condition were recorded using plaque index and gingival index. On the basis of mean baseline plaque and gingival scores, subjects were allocated to four different groups, using their assigned products twice a day, before bed and after breakfast. Plaque and gingival scores were recorded after three and six weeks. RESULTS: Mean plaque and gingival scores were reduced over the six-week trial period for experimental and control groups. Chlorhexidine gluconate gel reduced the plaque and gingival scores significantly more ($p<0.05$) than the chlorhexidine gluconate mouthwash. Neem extract gel also showed significant ($p<0,05$) reduction in plaque and gingival scores when compared with the control group. But there was no significant difference between the groups treated with chlorhexidine gel and neem extract gel. CONCLUSION: The results of this clinical study indicate that better therapeutic efficacy can be achieved using gels for treating oral infections than conventional treatments using mouthwash.
Publication Types: Clinical Trial Randomized Controlled Trial
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J Ethnopharmacol. 1999 Nov 1;67(2):189-95.

Chemopreventive potential of neem (Azadirachta indica) on 7,12-dimethylbenz[a]anthracene (DMBA) induced hamster buccal pouch carcinogenesis.

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The inhibitory effect of the aqueous extract of neem (Azadirachta indica A. Juss.) on 7,12-dimethylbenz[a]anthracene (DMBA) induced buccal pouch carcinogenesis was investigated in Syrian male hamsters. All hamsters painted on their buccal pouch with DMBA for 14 weeks developed squamous cell carcinoma. Administration of neem leaf extract effectively suppressed oral carcinogenesis initiated with DMBA as revealed by the reduced incidence of neoplasms. Lipid peroxidation, glutathione (GSH) content and the activities of glutathione peroxidase (GPx), glutathione S-transferase (GST) and gammaglutamyl transpeptidase (GGT) were used to biomonitor the chemopreventive potential of neem. Lipid peroxidation was found to be significantly decreased, whereas GSH, GPx, GST and GGT were elevated in the oral mucosa of tumour bearing animals. Our data suggest that neem may exert its chemopreventive effects in the oral mucosa by modulation of lipid peroxidation, antioxidants and detoxification systems.
PMID: 10619383 [PubMed - indexed for MEDLINE]

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Folklore therapeutic indigenous plants in periodontal disorders in India (review, experimental and clinical approach).

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http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3042642&query_hl=38&itool=pubmed_docsum

Though a number of plants and their parts are used for dental ailments among population in rural and urban areas of developing countries, in India however, the most common house-hold, road-side plants are mango (Mangifera indica), neem (Azadirachta indica; Melia azadirachta), ocimum (Ocimum basilicum), tea-dust (Camellia sinensis) and uncommonly murayya, i.e., currey leaf (Murayya koenigi) [Chopra et al. 1958, Kirtikar and Basu 1935, Nadakarni 1954, Satyavati 1984]. The leaves of these plants are folded and brushed (massage with teadust) against the teeth. Therefore, the present study is restricted only to the fleshy leaf extracts [Jindal et al. 1975] (except tea) of these plants inspite of certain limitations in the methodology and arbitrations in the microbial identification and isolation in the light of recent advances in folk dentistry. The investigation was carried out in two parts: 1) Experimental study: The efficacy of various dentifrices (commonly available in the market) and the potentiating effect

of the leaf extract (LE) of the aforesaid indigenous plants when amalgamated with the tooth-paste against pathogens, were investigated. Further, the protection afforded by the said plant extracts (PE) over the conventional allopathic medicines on the human plaque cultures and gram negative bacteria from patients were studied. 2) Clinical study: The therapeutic effects of the said PE (individually) on clinical application among severely infected patients were examined.
Publication Types: Review
PMID: 3042642 [PubMed - indexed for MEDLINE]

Quintessenz. 1971 Jul;22(7):25.
[Influence of Neem tree extracts on inflammatory changes of the gingiva]
[Article in German]
Rathje R.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=5292567&query_hl=38&itool=pubmed_docsum

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