Researchers develop robot that performs brain surgery

BRUSSELS, Belgium: An EU-funded team of researchers has developed a robot able to help neurosurgeons in performing keyhole brain surgery. The robot was tested for its accurate performance during tests on dummies. The team believes it can be used to help physicians treat their patients for epilepsy, Tourette’s syndrome and Parkinson’s disease.

The robot is claimed to have incredible memory and accuracy in performance, especially because it has 15 types of movement compared with the four available to human hands, as well as haptic feedback – physical cues allowing physicians to assess tissue and perceive the amount of force applied during surgery.

The ROBOCAST (Robot and sensors integration as guidance for enhanced computer assisted surgery and therapy) project received €3.45 million under the “Information and communication technologies” theme of the EU’s Seventh Framework Programme.

Led by the Politecnico di Milano university in Italy, the ROBOCAST partners developed hardware experts call mechatronics, which constructs the robot’s body and nervous system, as well as intelligence software. The software comprises a multiple robot system, an independent trajectory planner, an advanced controller and a set of field sensors.

The ROBOCAST consortium developed the mechatronic phase of the project as a modular system with two robots and one active biomimetic probe. These were integrated into a sensory motor framework to run as one unit.

The first robot has the ability to locate its miniature companion robot through six degrees of freedom, and moves from left to right, up and down, and backwards and forwards. It also has three rotational movements, namely forwards and backwards, side to side, or left to right. These all work together to locate the robot’s companion anywhere in a 3-D space. The robot, say the researchers, can also ease the tremor of a surgeon’s hands up to tenfold.

The miniature robot holds the probe that is used through the keyhole. According to the researchers, optical trackers are located at the end of the probe and on the patient. The force applied is managed by the robot, which also controls the position using a combination of sensors.

This allows it to determine the trajectory of the surgical work.

According to the developers, the path the robot follows inside the brain is determined on the basis of a risk atlas and the evaluation of preoperative diagnostic information.

The ROBOCAST team comprises experts from Germany, Israel, Italy and the UK. Future research plans include investigating robotic neurosurgery for patients who would remain conscious during their surgery.

Gulf’s first ever mobile diabetes clinic prepares for tour launch

The Emirates Diabetes Society’s ‘Win Over Diabetes’ mobile clinic is in its final preparations to begin its journey across the United Arab Emirates (UAE), with the first visit taking place in the rural area of Al Lusail, between Dubai and Al Ain, on Saturday 28 January.

Inaugurated in Dubai last December at the prestigious International Diabetes Federation-sponsored World Diabetes Congress, the mobile clinic patient initiative will act as an education, disease consultation and treat-
The day-trip will allow specialists on board to carry out diabetes screening, provide examinations and consultations for diabetic patients, and provide wider medical education to physicians, patients and nurses in the area to aid effective management of the disease and also reduce the staggering rate of diabetes in the local population.

The Win Over Diabetes mobile clinic is also fully equipped to provide screenings to the residents of Al Lusail, which will involve blood glucose, blood pressure and lipid testing, together with the monitoring of other important vital signs.

Diabetes mellitus is the fourth leading cause of death by disease globally, and is the leading cause of blindness and visual impairment among adults in developed countries.

According to the World Health Organization, the prevalence of diabetes is highest among member countries of the Gulf Cooperation Council (GCC), ranging from 11.5 to 30%, with more than 28% of the local population affected in the UAE. This makes diabetes management a key priority for all the stakeholders in the UAE.

The ‘Win Over Diabetes’ mobile clinic campaign intends to cover all seven UAE emirates over a 12-month period, with specialist health care practitioners onboard making visits to the country’s many hospitals, healthcare clinics, and community centres.

Organizers of the ‘Win Over Diabetes’ Mobile Clinic campaign also point out that the mobile clinic tour is not only intended to screen UAE residents for diabetes but also to offer treatment and care optimization in remote areas, including:

- Diabetic patients also suffering from complications such as hypoglycaemia
- Weight gain in diabetic patients due to a lack of effective management and even, in some cases, awareness of their illness
- Patients with diabetes-associated illnesses such as high blood pressure (hypertension) and abnormal levels of fats/cholesterol in the blood (dyslipidaemia)

The Win Over Diabetes mobile clinic is a joint patient service initiative between the Emirates Diabetes Society and Swiss pharmaceutical company, Novartis - one of the leading pharmaceutical companies worldwide, offering partnership in patient-oriented services beyond the innovative medications across different therapeutic areas.
Assurance

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By using dental X-rays, the risk of fractures can now be predicted long before a fracture actually occurs, Swedish researchers at the University of Gothenburg’s Sahlgrenska Academy have found. In a previous study, researchers at the Academy and the Public Dental Service of the Region Vastra Gotaland had demonstrated that a sparse bone structure in the trabecular bone in the mandible is linked to a greater probability of having previously had fractures in other parts of the body.

The Gothenburg researchers followed this research with a new study that demonstrates that it is possible to use dental X-rays to investigate the bone structure in the lower jaw, which enables doctors to predict who is at greater risk of fractures in the future.

“We have discovered that sparse bone structure in the lower jaw in mid-life is directly linked to the risk of fractures in other parts of the body later in life,” said Prof Lauren Lissner, researcher at the Institute of Medicine at the Sahlgrenska Academy.

The study draws on data from The prospective population study of women in Gothenburg, which was begun in 1968. “Given that this study has now been running for over 40 years, the material is globally unique,” the Academy stated. The ongoing study includes 731 women, who have been examined on several occasions since 1968, when they were 38 to 60 years old. X-ray images of their jaw bone were analysed in 1968 and 1980 and the results related to the incidence of subsequent fractures. “The youngest cohort is now over 80 years old. Many of the cohorts, who were born earlier, have died. We regularly check the cohorts’ status by monitoring the mortality and hospital registries,”

According to the Academy, for the first 12 years, fractures were self-reported during follow-up examinations. It is only since the 1980s that it has been possible to use medical registers to identify fractures. A total of 222 fractures were identified during the whole observation period.

The researchers also concluded that the older the person, the stronger the link between sparse bone structure in the jaw and fractures in other parts of the body. Although the study was carried out on women, the researchers believe that the findings could be generalised to men.

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“Dental X-rays contain lots of information on bone structure,” said Grethe Jonasson, researcher at the Research Centre of the Public Dental Service in Vastra Gotaland, who initiated the fractures study. “By analysing these images, dentists can identify people who are at greater risk of fractures long before the first fracture occurs.”

The study A prospective study of mandibular trabecular bone to predict fracture incidence in women was published in the October issue of the Bone journal.
Cetylpyridinium Chloride, An innovative molecule

The use of physical and chemical components for oral hygiene dates back to approximately 5000 years before Christ. Throughout history, man has developed tools to take care of teeth and prevent bad odour. Later, with the emergence of microbiology, it was found that those responsible for bad breath and the most common oral diseases were bacteria, and removing them with antiseptics was proposed.

Until now, a series of compounds with the ability to eliminate microorganisms have been tested; however, it has been discovered that not all of them can be used in the oral cavity, because they can potentially damage soft tissues, mucosa or teeth, or because they have an unpleasant taste or smell. These difficulties still exist today and should be resolved in order to come up with effective oral hygiene tools.

A series of compounds that are capable of combating dental plaque exist and have been classified as follows:

- **Antiseptic agents** that prevent proliferation and/or eliminate microorganisms that form plaque.
- **Antibiotics** capable of inhibiting or killing specific bacterial groups.
- Enzymes or enzyme combinations that can break up or disperse the extracellular matrix of the biofilm or act upon the community physiology.
- **Non-enzymatic** dispersing, denaturalising or modifying agents that can alter plaque structure or the metabolic activity of plaque.
- Agents that can interfere with the adhesion of the acquired pellicle.

Currently, a great number of toothpastes and mouthwashes are available on the market that are presented as products that are efficient in maintaining optimal oral health. Different antigingivitis and antiplaque products are formulated with active ingredients such as triclosan (toothpastes), stannous fluoride (mouthwashes), and CPC as their active ingredients.

**Pros and Cons of CHX, alcohol and CPC**

Currently, the majority of mouthwashes use CHX, alcohol and CPC as their active ingredients or a mixture of these. However, different studies have found that alcohol can present some adverse effects, such as oral or oesophageal cancer and the deterioration of synthetic dental reconstruction materials and is contraindicated in patients with mucositis, immunocompromised patients, patients undergoing head and neck irradiation, sensitised patients and in children.

Different studies have shown that mouthwashes containing CHX, CPC and a combination of both act efficiently as antiplaque agents on halitosis and on gingivitis. CHX is probably the most frequently used molecule in different health disciplines due to its excellent antibacterial effect. Particularly in the oral cavity, it shows the best results for treating periodontal disease. However, it is true that it does possess some adverse effects, such as promoting the formation of calculus, tooth staining and a bitter taste. Also, some clinical studies have described that it may cause mucosal irritation and desquamation.

Because of CHX’s side effects, certain molecules such as CPC have become very important. Currently, new formulations are being developed to improve the effectiveness of CPC either alone as the main active ingredient or in mouthwashes combined with CHX.

**DIFFERENT STUDIES HAVE SHOWN THAT CPC IN DIFFERENT CONCENTRATIONS IS EFFECTIVE IN REDUCING SUPRA AND SUBGINGIVAL DENTAL BACTERIAL PLAQUE**

Nowadays, CPC is being used in various applications in the food industry, since it is capable of eliminating pathogens such as Salmonella spp. and Campylobacter spp., as well as killing Staphylococcus spp. bacteria in proportions of 1:50000 in merely 10 minutes. It is also used in the pharmaceutical and cosmetic industries and as a cleaning and disinfecting agent.

Cetylpyridinium Chloride (CPC)

N-hexadecylpyridinium chloride or CPC is classified as a cationic quaternary ammonium surfactant, is soluble in alcohol and in aqueous solutions; it can act as a detergent and as an antibiotic; it is non-oxidizing and non-corrosive and has a neutral pH. Its molecular structure is made up of a polar and a non-polar region, as shown in figure 1.

This molecule has bactericidal and bacteriostatic activity against Gram positive and Gram negative bacteria, although evidence suggests that it is more effective against the first ones. It is thought that its mechanism of action is related to the denaturation of the bacterial cell wall, the alteration of its permeability and the inhibition of DNA synthesis.

**DIFFERENT STUDIES HAVE SHOWN THAT MOUTHWASHES CONTAINING CHX, CPC AND A COMBINATION OF BOTH ACT EFFICIENTLY AS ANTIPLAQUE AGENTS ON HALITOSIS AND ON GINGIVITIS.**
The vital amputation (VA) of deciduous teeth with the goal of maintenance of vitality for a limited period is a widely accepted measure. Vital amputations of permanent teeth, however, is only applied for limited indications. While there are no contraindications for free calcium hydroxide (Ca(OH)2) and minimal trioxide aggregate (MTA) are recommended for root canal fillings (RCF), therapeutic agents such as calcium hydroxide (Ca(OH)2) have limited indications. While controversial subject, the European Society of Endodontology (ESE) defines pulp amputation as a procedure during which the part of the exposed vital pulp tissue is removed with the aim of maintaining vitality and function of the remaining parts of the pulp.1 ESE recognises the following indications for VAs (i.e. pulpotomy):

1. Treatment of deciduous teeth
2. Treatment of permanent teeth with incomplete root growth
3. Emergency measure.

Indications 2 and 3 include the option of a later definitive root canal treatment (RCT).

Seidler recommends VA for the accidentally opened pulp of young molars and extremely curved, narrow root canals.2 Stern considers difficulty in opening the mouth an indication for VA.3,5

McDougal et al. extend the indication for pulpotomy when there is no pain, as some patients are unable or unwilling to bear the expense of a RCT.4

According to Swift et al., a successful VA may be expected following anxious root canal treatment and the use of a hardly cavitated pulp exposure.5 We consider predictable success with the following prerequisites: non-inflamed pulp; bacteria-proof closure; and use of a pulp-compatible capping material.

Seidler states the following regarding the success of VA:

- A higher rate of success is observed in cases of iatrogenic pulp exposure.
- Treatment success is reduced in cases of complete root growth.
- Molars are more successfully treated than incisors.
- For a pulpotomy with Ca(OH)2, Jessup presupposes that there is no pain present anamnestically.6

Teixeira et al. corroborate the significance of pain prior to VA.7 In their study of 41 Ca(OH)2 vitally amputated permanent teeth, anamnestic pain existed in 12 cases. The pulpotomies of these aching teeth led to failure after six to eight months in 50% of the cases (n=6), while all other vitally amputated teeth were considered successfully treated.

McDougal et al. report on 75 erupting permanent teeth on which permanent molars and premolars.4 A clinical success rate of 90% after six months and 78% after 12 months was observed. The teeth, which were treated with Ca(OH)2 at check-up, were radiologically controlled and it was shown that 40% of the teeth were free of pathological findings after six months and 42% after 12 months.

According to Jensen, pulpotomy is an attempt to stimulate hard tissue healing at the area of amputation.6 Fountain and Camp point out that a pulpotomy may result in canal calcification, internal resorption or necrosis of the pulp.8 Kozlow and Massler refer to literature that reports the formation of a dentine bridge in rat teeth under non-calcium-containing materials, such as wax, amalgam, acrylic resin and zinc oxide-eugenol.9 In human teeth, the bridging under Ca(OH)2 was successful in 45% of the cases and in 23% of the cases. During their own tests on rat teeth, the authors assessed good reparative reactions with complete bridging following pulpotomy with Ca(OH)2, zinc oxide-eugenol, cortisone and silver amalgam.

According to Alcam, various materials are recommended for pulpotomy: Ca(OH)2, formocresol, glutaraldehyde, ferrous sulphate, zinc oxide-eugenol and polyacryloxy late.6, 10 Salako et al. compared MTA, formocresol, ferrous sulphate and bis-active glass with regard to their pulpotomy compatability and found MTA to be the ideal pulpotomy agent.11 Agents that contain CH2O, such as formocresol, glycerine and water, are used in formocresol pulp therapy.12

Accordingly, Kajander states the following regarding the success of VA:

- In 12 cases, the pulpotomy had to be performed at least two years prior to inclusion in the study. Check-ups were performed at an average of 56 months (24 to 140). The teeth were separated into two groups (Table 1). Two failures occurred in the first group, in teeth with incomplete root growth (after ten days and 48 months). The other 29 teeth (93.5%) were treated successfully. In the second group, two failures occurred after (10 and 24 months) in teeth with periodontal gap enlargement (one tooth with complete root growth and the other with incomplete root growth).

Molen states that there were no pathological findings in 1,501 root-filled roots in 51.6% of the cases and in 256 pulpotomized roots in 65% of the cases.14 Banking on the success rate of a new VA agent called CEM, a cement mixture enriched with Ca, in 205 pulpotomies on molars, 15

For comparison, 202 molars were extripated vitaly. The root canal filling (RCF) was performed via lateral condensation with AH Plus (DEUTSCHES DENTAL- AMERICA) as sealant. After seven days, 58% of the pulpotomy-treated and 60% of the root canal-treated patients reported needing analgesics. After six months, 89.94% of the patients underwent a radiological check-up. The pulpotomy patients revealed a significantly higher success rate (p<0.001).

The most frequently used VA agent for deciduous teeth is formocresol, a mix of CH2O, cresol, glycerine and water. A survey showed that formocresol pulp-potomies on deciduous teeth were performed by general dentists in 75% of the cases and by paediatric dentists in 98.2% of the cases.16 The frequency of use on permanent teeth was lower: 18.4% for general and 55% for paediatric dentists.17

Fisch published the results of pulp amputations of 600 teeth, which were performed with the CH2O-containing preparation Triopaste.17 Check-ups were done between six months and 18 years after amputation. Examination of the X-ray controls revealed a patho-logical apex in 9%. Eleven teeth were histologically examined. Hard substance formation was observed in the form of apical foramen closures and apposition at the apical canal walls, which partially led to obliteration of the canal lumen.

During an accelerated test lasting up to 2.5 months, Overdiek tested N2 as CH2O-containing VA agent on human teeth. He observed that for several weeks following N2 application there was a possibility of a hard substance barrier forming.18

Over a period of 12 years, Stern’s carried out 175 N2 pulpotomies under relative isolation on teeth with complete root growth, regardless of possible anamnestic pain. Fifteen percent of the patients experienced increased pain after treatment, which subsided within 48 hours. Four patients, however, developed pulpsitis, which resulted in the extraction of three teeth and conservative RCT of one tooth. Stern was able to track the outcome of 55 vitally amputated teeth over a longer period. During the course of check-ups, two teeth were extracted, one of them due to a fracture. Five years after treatment, Stern observed the advance of calcification of nerve channels.

Frankl considers the advantage of pulpotomy compared with RCT as there being no instrument fractures or perforations in pulpotomy. A possible failure could always be countered with a RCT. He asserts that Ca(OH)2 pulpotomies can be successful only if teeth are asymptomatic prior to treatment and for accidentally opened pulp and, therefore, bleeding from the pulp.
According to the literature, N2 on decaying teeth tends significantly better results than Ca(OH)2 pulpotomy. Therefore, Frankl performed N2 pulpotomies on permanent molars in 1976.19,20 He selected only asymptomatic teeth whose pulp had undergone recent extirpation for treatment. The treatment was performed under a rubber dam and thus pulp bleeding did not have any effect. Two hundred and fifty cases were re-examined for a period of 8–14 years. The patients ranged between 22 and 55 years. Failures manifested by pain in within 48 hours amounted to 2%. The aim of the following study was to analyse the success and failure of N2/V2 pulpotomies, for example, and whether the rates with vital molar extractions were done within the same period.

Material and method

The study was conducted in my dental practice, which is located in a rural area. Between 1996 and 1998, 751 teeth were treated. Vital extractions (VEs) were performed on molars. After treatment, 85 VA and 93 VE patients did not return to the practice and thus pulp bleeding did not have any effect. Two hundred and fifty cases were re-examined for a period of 8–14 years. The patients ranged between 22 and 55 years. Failures manifested by pain in within 48 hours amounted to 2%. The aim of the following study was to analyse the success and failure of N2/V2 pulpotomies, for example, and whether the rates with vital molar extractions were done within the same period.

Table I

<table>
<thead>
<tr>
<th>Failure diagnosis</th>
<th>VA</th>
<th>VE</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure rate (%)</td>
<td>10.8</td>
<td>19.3</td>
<td>0.014</td>
</tr>
</tbody>
</table>

The failure diagnosis after VA was most frequently made for the lower second molar (18.3%) and after VE for the lower first molar (19%). The lower wisdom teeth were conspicuous because the failure rate was only 4.7% after VA, and no failure at all was observed after VE. Not every failure diagnosis led to therapeutic consequences such as extractions.

Discussion

A direct comparison between VAs and VEs, especially regarding incomplete root fillings, was only possible to some extent. As many asbestos filled with the Ca(OH)2 Va s.12 The total failure rate (radiological and clinical) was 11.9% after VA and 36.6% after VE (23.3%) than VEs (36.6%).

The correlation between failure and BCF level following VEs was investigated. Adequate filled teeth (-2, -1 adapicm) showed a failure rate of 9.1% and inadequately filled teeth a rate of 22.1%. Hence, the conclusion may be drawn that the absence of BCF level corresponds to the one of properly performed root fillings following VEs, and is far superior to a noticeable underfilled root filling. Molven attributes a more favourable peritubal situation to pulpotomised than to root-filled crowns.

In their study, Asgary and Eichmann do not explain the technical performance of the BCF. However, they exclusively used pulpotomies which are statistically significantly superior to RCFs of vital teeth. The technical failure is neither defined nor numerically expressed. Additionally, the follow-up time of six months is considered very brief.

Summary

A comparison of 710 N2 VAs and 852 N2 root-filled molars after VA was done. The average follow-up time of the Va group was 12 months and 94.4 months for VAs. The total failure rate (radiological and clinical) was 11.9% after VA and 36.6% after VE (23.3%).

For the practice

The patient should be advised of possible pain following the subsiding anaesthetic effect. Analgesics should be given. An N2 VA is more successful than an insufficient root filling after VE. Vital amputation is indicated in cases of inaccessible canal systems. The patient's pain should be considered. Analgesics should be given. An N2 VA is more successful than an insufficient root filling after VE.
Dental practice in Japan goes Kitty-crazy

TOKYO, Japan: With Hello Kitty, the Japanese wholesale company Sanrio created a trademark that is recognised by consumers worldwide. Last week, the first dental practice fully branded with the white cat’s head and characteristic red bow was opened in the capital Tokyo.

Bought by dentist Koshika Masanori in November, the facility has been completely renovated over the past two months, featuring pink examination rooms, heart-shaped waiting chairs and chandeliers. According to its website, the practice is currently offering a wide range of dental procedures, including implants, cosmetic dentistry, prophylaxis, and periodontal and paediatric treatments. Media reports said that the unique project has received full support by Sanrio, whose Japanese headquarters is only 20 minutes away from the practice.

The company introduced its iconic logo modelled on a Japanese bobtail cat in 1974. Nowadays, it can be found on almost any retail product, including toys, clothing, cellphones and even tooth caps used in orthodontics.

Last year, the brand was reported to have generated over ¥80 billion (US$1.04 billion) revenues in Japan only.

Osteoporosis drug ingredient found useful against periodontitis

BANGALORE, India/CHICAGO, Ill, USA: Certain kinds of bisphosphonates may have potential in treating severe forms of gum disease, a clinical study conducted by Indian researchers has revealed. Clinical specialists from the Government Dental College and Research Institute in Bangalore are reporting that a solution containing Alendronate acid was found to stimulate an increase of probing depth reduction as well as bone fill in patients suffering from aggressive periodontitis.

During a six-month clinical trial, the researchers treated over 50 intrabony defects with a solution made of 1% Alendronate and a polyacrylic acid-distilled water mixture. Other patients with the same conditions were treated with a placebo gel. The results showed an improvement of clinical parameters such as probing depth reduction, clinical attachment level and bone fill in patients treated with the Alendronate solution.

Preparations based on Alendronate are available on the market since 1995. They are used to treat common bone diseases like osteoporosis. Data derived from clinical studies with these drugs has demonstrated a reduction of fracture risks and normalisation of bone turnover rate in postmenopausal women, amongst other benefits.
Belmont Launches new CP-ONE PLUS

TAKARA BELMONT is known as a world leading manufacturer of dental equipment of high durability and reliability as it has been thoroughly committed to pursuing advanced technologies to manufacture safe, high quality products since 1921.

The CP-ONE PLUS is the latest addition to the dental unit range from TAKARA BELMONT. The CP-ONE PLUS succeeds in taking the concept of the CP-ONE and improving it with advanced technology and comfort. Think of communication, patient comfort and operator comfort.

The CP-ONE PLUS was designed by incorporating dentists' requirements and desires one by one, from the treatment space all the way down to minute details that will be recognized through dentists' fingertips. An ideal treatment environment, the CP-ONE PLUS is a “thinking of all” dental chair and unit, the answer to dentists' aspirations, made possible only through the fusion of the expertise and technological leadership of TAKARA BELMONT.

Thinking of Communication
The CP-ONE PLUS is a comfort ergonomically designed folding leg-rest chair and base-mounted unit enabling patients to access to the chair either from front or from side with ease. It can be put in a 6 o'clock face-to-face treatment. Standing directly in front of the patient gives the doctor an accurate picture of the patient's jaw and bite. CP-ONE PLUS provides a 90 degree eye-contact position that is conducive to a natural, stress-free atmosphere for discussion, and provides for relaxed, thorough communication. The patient perfectly communicates what they are feeling, and the doctor communicates what they intend to do.

Thinking of Patient Comfort
To provide true comfort for all patients including children, the elderly and those with limited mobility, the CP-ONE PLUS is designed with abundance of new innovative features. The folding leg-rest chair with low initial height of 40mm secures easy access. The new shock-less hydraulic system eliminates any jarring movements of the chair, keeping patients calm and comfortable ensuring a stress-free treatment. Besides the standard manually rotatable cuspidor bowl, the optional electrically-motorized rotatable cuspidor bowl is available to facilitate patient access. The movement of the hydraulic powered head-rest causes the mouth to naturally open wide, decreasing the burden of the patient. Additionally, the newly-designed arm-rest and optional leg-rest heater offer luxury and relaxation for patients.

Thinking of Operator Comfort
The CP-ONE PLUS not only addresses operator's daily requirements, but also meets your unfulfilled demands. The arc delivery system that is inherited from the CP-ONE allows effort-less transfer of instruments and smooth positioning adjustment of the doctor providing the optimum position anywhere from 8 to 2 o'clock, that give you an unprecedented operating style. The redesigned instruments holder is adjustable horizontally and vertically, which ensures that the dentist always has his tools within easy reach. Two types of instruments storage are available, holder, and place type. Both types are detachable and autoclavable to enhance hygiene.

The newly developed foot controller (electric control) is controlled by either pressing and/or turning the disk, which provides precise instruments control. The assistant instrument holders are detachable and autoclavable. In addition, various types of cups (paper, plastic, stainless) can be used due to the new cup-filler sensor.

Upholstery is available from an extensive selection of 18 colours. Furthermore the newly-developed LED dental light equipped with 10 white LED modules is coming soon as an extra option.

AD

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Clesta-II Holder type
Detachable, rotatable cuspidor
Aluminium base

DT

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Belmont Launches new CP-ONE PLUS

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Planmed Verity, a new, mobile extremity scanner for orthopedic imaging of the extremities receives the CE mark and thus, is now available for sale in the EU and many other countries where the CE certificate permits sales.

Planmed Verity Extremity Scanner utilizes cone-beam CT (CBCT) technology that provides fast and accurate low-dose 3D imaging of peripheral skeletal fractures and disorders at the point-of-care. The compact, mobile device can be easily sited in any existing X-ray room, side-by-side with other imaging systems.

“As an all new approach to imaging of extremities, the Planmed Verity system has already raised a lot of interest within the field of orthopedic imaging. Now the pending system deliveries can begin”, says Mr. Vesa Mattila, Vice President of Planmed Oy.

Planmed’s innovation provides volumetric 3D imaging for accurate and fast diagnosis with a substantially lower radiation dose compared to conventional CT imaging. During the scan, which takes less than 20 seconds, images are acquired using a short X-ray pulse instead of continuous radiation. This enables a low radiation dose.

For optimum patient comfort the Planmed Verity features an adaptable, soft-surfaced gantry with a TearDrop-shaped bore optimized for orthopedic imaging. The gantry and positioning trays are easily adjustable for imaging for example a foot, ankle, knee, hand, wrist, or elbow. Furthermore, special gantry movements allow weight-bearing 3D scans of a standing patient, a new way of extremity imaging which has not been possible with conventional CT scanners.

For further information, please contact:
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Dried licorice root fights the bacteria that cause tooth decay and gum Disease

Scientists are reporting identification of two substances in licorice - used extensively in Chinese traditional medicine - that kill the major bacteria responsible for tooth decay and gum disease, the leading causes of tooth loss in children and adults. In a study in ACS’ Journal of Natural Products, they say that these substances could have a role in treating and preventing tooth decay and gum disease.

Stefan Gafner and colleagues explain that the dried root of the licorice plant is a common treatment in Chinese traditional medicine, especially as a way to enhance the activity of other herbal ingredients or as a flavoring. Despite the popularity of licorice candy in the U.S., licorice root has been replaced in domestic candy with anise oil, which has a similar flavor. Traditional medical practitioners use dried licorice root to treat various ailments, such as respiratory and digestive problems, but few modern scientific studies address whether licorice really works.

(Consumers should check with their health care provider before taking licorice root because it can have undesirable effects and interactions with prescription drugs.) To test whether the sweet root could combat the bacteria that cause gum disease and cavities, the researchers took a closer look at various substances in licorice. They found that two of the licorice compounds, licoricidin and licorisdiflavans A, were the most effective antibacterial substances. These substances killed two of the major bacteria responsible for dental cavities and two of the bacteria that promote gum disease. One of the compounds - licoricidin - also killed a third gum disease bacterium. The researchers say that these substances could treat or even prevent oral infections.
British woman coughs up oral tumour

COVENTRY, UK: A woman from Coventry has coughed up a cancerous tumour. According to reports, 57-year-old Claire Osborn had two coughing fits, both of which produced pieces of the tumour. It is believed that the lump, which is thought to have been growing on the back of her throat, became dislodged before the coughing fits.

Osborn took the 2 cm heart-shaped lump to the doctors. “I knew something was very wrong so I went straight to my GP,” Osborn was reported to have said. Scans showed that the tissue was in fact an aggressive throat and mouth cancer. Osborn was informed that there was a chance that the tumour may not be the only one in her body.

“I was devastated. I just thought I was going to die,” Osborn was reported to have said. However, doctors were amazed to find that the cancerous tumour was in fact the only one in her body and after a scan at University Hospital Coventry she was given the all clear. According to one report, Osborn said: “The consultant turned round to me and said ‘It appears you have coughed up your cancer. Congratulations’.”

Fewer than 50 similar cases have ever been recorded in the world. Head and neck surgeon Gary Walton was reported to have said: “We suspect the tumour grew on a stalk at the back of her mouth which is very difficult to detect. Somehow she dislodged this, the stalk snapped and she coughed up the tumour.”

action on bacteria is at the plasma membrane level (Mandel, 1998) where the positive charge creates an attraction between the molecule and the negative charge of the phospholipids that make up the bacterial cell membrane. Once the molecule attaches to the membrane, the non-polar side of the CPC penetrates and alters the cellular membrane. This alteration causes an osmotic imbalance and causes loss of cytoplasmic material and then cell death.

Even though it can also stain enamel, it does this at a much lower degree than CHX. Differently, in vitro and in vivo studies have proven that CPC at different concentrations is effective in reducing supra and subgingival dental bacterial plaque, which in turn also reduces inflammatory response 12,15. Likewise, work carried out by Boldan et al in 2005 clearly describes that a formulation with CPC, CHX and Zinc Lactate has very good results, significantly eliminating anaerobic microorganisms, such as F. nucleatum and P. intermedia from the tongue surface and from the saliva.

Similarly, a clinical study comparing different mouthwashes showed a reduction in anaerobic microorganisms in patients’ saliva samples. This same study also measured the quantity of volatile sulphur compounds (responsible for the bad odour of halitosis) and proved that they were reduced considerably when using mouthwashes with CPC as one of its active ingredients 14.

In a review from year 2008, van den Broek et al compared results from different clinical studies where the activity of different mouthwashes against halitosis was tested. They point out that studies in which products like HALITA, which contains CPC, CHX and Zinc Lactate in its formula are the ones that yielded the best results.

Other clinical studies have tested mouthwashes with different formulations and concentrations of CPC15,16. In general, their results show that this compound, by itself at different concentrations has antiplaque effects. It has also been combined with Sodium fluoride, alcohol and CHX with the intention of reducing the concentration of the two latter compounds because of their adverse effects.

Thus, it has been proven that CPC can be used as a treatment for certain oral pathologies, like for instance, mucositis, especially in patients who have undergone irradiation for head and neck cancer or those who suffer from periodontitis or gingivitis.

Dr. Rubén León
Director of R&D at Dentaid, B.S. in Biology and PhD in Genetics.

What research has Dentaid carried out on the CPC molecule?
At Dentaid, a number of studies have been performed using this molecule, that have led to the confeciton of diverse formulations that currently aid in human oral hygiene. Also, among these, we have studies on antimicrobial activity, stability studies of the formulations for replacing ethanol in mouthwashes and improving CPC’s bioavailability.

We have also carried out different clinical studies with national and foreign universities that have shown that products containing this molecule are among the most efficient on the market.

Having proven the properties of this molecule, how is Dentaid applying it in its products?
Dentaid has developed a line of products that contain CPC among its active ingredients, products that are meant for care and treatment of pathologies like periodontitis, gingivitis, halitosis or maintenance in patients that have been treated for periodontitis. Currently, a group of products is being developed where this molecule has greater bioavailability.

“Dentaid has developed a line of products that contain CPC among its active ingredients”

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A shining SMILE in just 30 minutes!