Ivoclar Vivadent launches new alloy Callisto CP+

SCHAAN, Liechtenstein: Ivoclar Vivadent has announced the global launch of Callisto CP+, its new palladium-containing, cobalt-based ceramic alloy, featuring low density and high strength. According to the company, the indications of Callisto CP+ range from single-tooth restorations to long-span bridges, also allowing the fabrication of implant superstructures. Because of its high strength, it can also be used in the press technique.

With Callisto CP+, Ivoclar aims to complement its alloy product range, Manfred Tauber, Product Manager Alloys, explains. He also told Dental Tribune that the situation in the dental alloy market has taken its toll on purchase prices, which have increased although the selling price remains unchanged. “With Callisto CP+ we would like to adjust to the current market situation,” he continued. “We offer this alloy at a low reference price, making the purchase price for dentists and dental technicians a predictable factor.”

Owing to the low density of 8.9 g/cm³, both the price and the quantities needed are kept at a minimum, Mr Tauber added.

www.ivoclarvivadent.com

by Penny Palmer

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Dental Tribune UK moves in ‘leaps and bounds’

Penney Palmer
DT United Kingdom

LONDON, UK: Dental professionals from small practices in the UK are choosing to read Dental Tribune (DT) over any other dental publication, according to a recent survey by the British Dental Trade Association (BDTA). The Dental Readership Survey, by the BDTA, found that a total of 66 per cent of DT readers are from small practices and half of the dental professionals who read DT say they read it regularly.

More than half of DT’s readers are aged between 55 and 64. This makes DT the second preferred choice for people in this age group.

Penney Palmer, editor of DT, UK, said: “We have only been in the market for two years and are already moving in leaps and bounds compared to other stalwarts in the market that have been around for years.”

The survey also found that the British Dental Journal and BDJ News are the dental publications that attract the highest number of readers. A total of 96 per cent of dental professionals believe that dental publications enable them to keep abreast of what is happening in the dental industry; while 77 per cent read dental publications to gain information on the newest techniques.
The population is ageing rapidly because of the prolonged life expectancy evident in most industrialised countries in the world. Accordingly, the number of bedridden elderly requiring systemic care in residential and nursing homes is increasing. Institutionalised, elderly individuals who need systemic care have poorer oral health than those who live independently at home.4,5 In particular, the oral hygiene of the bedridden elderly is often poor.6 Diminished oral health, in turn, may affect their quality of life.4,6 Moreover, changes in microflora related to poor oral health include an increase in the prevalence of bacteria that contribute to the development of periodontal disease7 as bacteria present in oropharyngeal flora are aspirated into the respiratory tract; therefore, their presence is a risk for the elderly and compromised hosts. As a result, chronic periodontal disease can be a source of infection, and due to the compromised immune system of elderly individuals, oral hygiene is considered important for controlling oral micro-organisms, including opportunistic pathogens on tooth and mucosal surfaces, and some studies have indicated that oral hygiene treatment of hospitalised elderly patients reduces the risk of pneumonia.8,9,10 Thus, professional oral care may be effective for reducing the number of dental and respiratory bacteria in elderly residents of long-term care facilities.11,12

Tooth brushing, removing of dental calculus, and oral washing are useful cleaning procedures for decreasing oral micro-organisms. However, it is important to note that although oral care treatment, oral micro-organisms are restored for a few hours and a certain amount are retained in the oral cavity. Healthy oral bacterial flora require a certain amount of oral components of micro-organisms. Oral bacterial communities, known as “oral microflora” and “commensal micro-organisms,” are dependent on species composition, surface or substratum composition, and the conditioning film that coat the surfaces on which they form.11,12 The interactions between oral streptococci and other bacteria are potentially beneficial for oral microflora. The interactions between these bacteria can be harmful for the oral microflora, and can cause a decrease in the number of oral streptococci. The interactions between these bacteria can result in the formation of biofilms, which are important for controlling the number of oral streptococci and preventing oral infections.13,14 Therefore, professional oral care is necessary for decreasing oral micro-organisms and preventing oral infections.15,16

Effects of professional oral care on oral infection in the elderly

Routine oral care in the institutionalised elderly

Regular and routine dental care may be effective in reducing the number of dental and respiratory bacteria in elderly residential and nursing homes.17,18 The presence of bacteria, including Staphylococcus aureus, Streptococcus sobrinus, Porphyromonas gingivalis, Aggregatibacter actinomycetemcomitans, and Aggregatibacter actinomycetemcomitans, are pathogens related to dental caries and periodontal disease in humans.19-22 The prevention of these diseases requires the control of these pathogens, which exist in an oral biofilm known as dental plaque. The use of antimicrobial agents has been found to be helpful for the prevention of dental caries, periodontal diseases, and periodontal disease. Chlorhexidine and other antimicrobial agents are effective for preventing dental caries. However, their clinical application is limited because they have a bitter taste and can cause stains with frequent use. Moreover, they induce various adverse reactions, such as taste alteration, oral irritation, and may cause the balance of normal and microbial flora, including oral streptococci, which exist in high concentration in the elderly, because the agents have broad spectrum to anti-microbiological agents.17,18 Therefore, it is important to use anti-microbiological agents that exhibit few or no side-effects on oral mucosa and act on specific pathogens in the oral cavity.

Effects of oral mucosal care on oral microorganisms

Oral care with mucosal care is an important practice for maintaining the oral health of the elderly.19-21 However, little is known about how oral care can control oral mucosal pathogens in the oral cavity. In order to determine an optimal control strategy for oral mucosal pathogens, such as mutants streptococci (MS) and Candida spp., which can maintain the oral health of the elderly, Nishiyama et al. (unpublished) examined the combined role of oral mucosal care and antibiotic treatment for controlling the number of oral streptococci and Candida spp. in the oral cavity.22

The use of antimicrobial agents for oral hygiene

Dental caries and periodontal diseases are a large problem for elderly individuals who are institutionalised, associated with tooth loss.23,24 Several species of bacteria, including Streptococcus sobrinus, Porphyromonas gingivalis, and Aggregatibacter actinomycetemcomitans, are pathogens related to dental caries and periodontal disease.25 The prevention of these diseases requires the control of these pathogens, which exist in an oral biofilm known as dental plaque. The use of antimicrobial agents has been found to be helpful for the prevention of dental caries, periodontal diseases, and periodontal disease. Chlorhexidine and other antimicrobial agents are effective for preventing dental caries. However, their clinical application is limited because they have a bitter taste and can cause stains with frequent use. Moreover, they induce various adverse reactions, such as taste alteration, oral irritation, and may cause the balance of normal and microbial flora, including oral streptococci, which exist in high concentration in the elderly, because the agents have broad spectrum to anti-microbiological agents.17,18 Therefore, it is important to use anti-microbiological agents that exhibit few or no side-effects on oral mucosa and act on specific pathogens in the oral cavity.
Effects of professional oral care on CD69+NK cells. Amounts of CD69+NK cells in NK cells were detected in blood from elderly subjects (n = 8) after conventional oral care for a month, professional oral care for a month, and three months after professional oral care. The results are expressed as the mean ± standard deviations of the percentages of CD69-NK cells. Histories show significant differences between control (primary data, one asterisk, P < 0.05) or data after conventional oral care (two asterisk, P < 0.01) and data after professional oral care in the Student’s t-test with the Bonferroni correction.

Fig. 4: The effects of professional oral care on CD69+NK cells.

and local immune response with regard to oral infections and oral diseases. Kamoda et al. (in press) conducted an epidemiological study of the independent elderly, to determine the relationship between activated natural killer (NK) cells and oral bacterial infections, such as dental caries and periodontal disease.30 Natural killer cells are instrumental in the innate immune response for the early production of interferon-gamma (IFN-γ) and other cytokines necessary for controlling bacterial, parasitic, and viral infections.30,31 Reports show that products prepared from leech extracts of Gram-positive bacteria, such as streptococci, staphylococci, and lactobacilli, activate human NK cells.30,31

One hundred independent elderly people aged 77 years old (54 males, 47 females) were examined. Blood samples were drawn and activated NK cells were evaluated using CD16, CD56, and CD69 monoclonal antibodies with flow cytometry. Human blood NK cells responsible for antibody-dependent, cell-mediated cytotoxicity constitutively express CD56 antigen and CD16. In addition, NK cells express C-type lectin receptors, such as CD39, which is an early activation marker.37 The majority of CD69+NK cells (CD16+CD56+) showed significant correlation with the isolation numbers of total streptococci (R = 0.409, P < 0.01; Fig. 5a), species numbers of opportunistic pathogens (R = 0.516, P < 0.01; Fig. 5b), numbers of decayed teeth (R = 0.223, P < 0.05), and the amount of bridge work (R = 0.219, P < 0.05). A high proportion of CD69+NK cells is associated with the incidence of dental caries, the number of opportunistic pathogens, and total streptococci in the oral cavity of the elderly. This suggests that determining the proportionate numbers of CD69+NK cells may be a useful indicator of oral infection in elderly subjects.

Following daily professional oral care for a month, the activated CD69+NK cells were measured in the institution-alised elderly. The results showed that the proportion of activated CD69+NK cells was significantly elevated by the treatment in comparison with the primary data of activated CD69+NK cells (Fig. 4). Therefore, it can be deduced that regular professional oral care may stimulate systemic immunity in the institutionalised elderly. This may indirectly control infection by opportunistic pathogens and the balance of the microbiological community, as well as the physical removal of bacteria in the oral cavity. However, further studies are required to explain these mechanisms.

Effects of local immunity on oral pathogens following professional oral care

We examined the amino acid residues 561–586 of Streptococcus mutans surface protein A (Pac) and an important region associated with the interaction between S. mutans and salivary components.37 The Pac (561–586) peptide has been shown to induce an antibody that inhibits the interactions of S. mutans with salivary components on tooth surfaces, which is considered important for the adherence of S. mutans to tooth surfaces. Low and high concentra-
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The number of MS in PPA not detected and PPA detected elderly subjects after professional oral care. The number of MS in anti-PAc(361–386) peptide salivary IgA (PPA) not detected and PPA detected elderly subjects was measured on the tooth-surface sample at zero, one, two, three, six, and 12 months after the start of professional oral care. The results are expressed as the mean ± standard deviations of the number of MS/mL of saliva from human subjects, respectively. Therefore, salivary IgA is key to controlling oral pathogens. However, little is known about how salivary IgA controls MS colonisation and infection in the oral cavity or about the components present in saliva that are anti-microbial agents. In order to determine the best dental caries prevention strategy for maintaining oral health of the elderly, we examined the combined role of the PPA during professional oral care and in the physical effects of professional care, as well as the effects of antibody function in reducing MS in the oral cavity during short- and long-term care.

Here we studied two groups of elderly patients with PPA present or absent in their saliva. Thirty-nine independently living, institutionalised, elderly subjects (mean age: 75.9 ± 7.5 years) participated in the study. Following professional oral care, the number of MS decreased significantly after six months in the saliva samples from the group without PPA in comparison with the primary data, whereas in the PPA detected group, a significant decrease in the number of MS was shown immediately after professional care of one month to 12 months in the saliva samples (Fig. 5). The measurement of PPA may be used for preventive instruction at chair side in a clinical office because it provides an effective evaluation of professional oral care to indicate elderly patients at risk of caries.

Conclusion
Healthy oral microflora are ensured by professional oral care with mucosal care, which may stimulate systemic immunological activity, promote local immunological activities to oral pathogens, and play a role in the physical removal of biofilm and micro-colonies formed by oral micro-organisms on teeth and tongue surfaces and mucosal epithelial cells attached to oral micro-organisms. Systemic and local immunities with the support effects of professional treatment that removes biofilm may be more effective in controlling oral micro-organisms in the oral cavity than conventional care that does not completely remove the biofilm. Routine professional oral hygiene using safe anti-microbial agents is necessary for a healthy environment in the oral cavity in the institutionalised elderly. The microflora, re-established by commensal bacteria, such as α-streptococci, after removing biofilm through routine professional treatment, provide a barrier to opportunistic pathogens. Therefore, routine professional oral care is considered to re-establish or sustain the healthy and non-pathogenic microflora in the oral cavity of elderly people.