Ivoclav Vivadent launches new alloy Callisto CP+

SCHAAN, Liechtenstein: Ivoclav 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 restoration 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+, Ivoclav 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.

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Dental Tribune UK moves in ‘leaps and bounds’

Penny 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 Readship 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 35 and 44. This makes DT the second preferred choice for people in this age group.

Penny 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 BDA 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.

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The population is ageing rapidly because of the prolonged life expectancy evident in many 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. In particular, the oral hygiene of the bedridden elderly is often poor.6

In the world. Accordingly, the number of institutionalised elderly patients reduces the risk of nosocomial pneumonia7,8 and may contribute to the development of pneumonia9 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, oral hygiene, including dental plaque can be aspirated into the lungs and cause pneumonia.7,8 Oral microflora is considered important for controlling oral microorganisms, 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.7,8,9 Thus, professional oral care may be effective for reducing the risk of nosocomial pneumonia and respiratory bacteria in elderly residents of long-term care facilities.

Tooth brushing, removing of dental calculus, and oral wash are useful cleaning procedures for decreasing oral microorganisms. However, it is important to note that oral care treatment, oral microorganisms 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 clearance, which is important for oral health.

Oral bacterial communities, known as biofilms, are composed of microorganisms, which are separated from the communities by species composition, surface or substratum composition, and the conditioning films that coat the surfaces upon which they form.10,11 The interactions between bacteria, such as Streptococci and other bacteria are potentially beneficial for one or more species present in the biofilm through aggregation.12,13 Oral streptococci have been shown to compose between 60 per cent to 90 per cent of the supragingival plaque biomass in the first 24 hours of colonization.14,15 Oral streptococci are normal inhabitants of the oral cavity, which play a role in resistance to colonisation by invading such species.16,17 The presence of a streptococci has been shown to have an inverse correlation with the presence of Peptostreptococcus spp. and MSRA in the oral cavity.18 The growth of a streptococci is associated inversely with the carriage of pathogenic bacterial species in the oral cavity.19 This indicates that humans required a certain amount of microorganisms, to survive for the process of evolution in the oral cavity.

Routine oral care in the institutionalised elderly

Regular and routine dental care may be effective for reducing the number of dental and respiratory bacteria in elderly residents of long-term care facilities. Although the effects of oral care have been reported, few studies have examined the bacterial differences of opportunistic pathogens in institutionalised, elderly residents before and after receiving regular dental care provided by caregivers and dental hygienists.20,21 In press, examined the effects of routine oral care on opportunistic pathogens at various points after admission to a nursing home.22 Twenty-five elderly subjects living in a nursing home (mean age: 86.0 ± 10.4 years old) participated in the study. Caregivers and dental hygienists cleaned teeth, dentures, tongue, and lacunae in the oral cavity using both routine professional oral care techniques. Regular oral care was found to be effective in reducing infection by sev- eral species and strains of opportunistic pathogens on tooth surfaces and the oral environment without food residue over a long term (six months, Fig. 1). Further, such care over a short-term (one month) significantly reduced infection by opportunistic pathogens on mucosal surfaces in subjects without dentures, but not in those with dentures. The results indicate the importance of routine oral care on hard and soft surfaces in the oral cavity for the prevention of fatal pneumonia and thus the improvement of quality of life in the institutionalised elderly.

Effects of oral mucosal care on oral microbiological infection

Professional care with mucosal care is an important practice for maintaining the oral health of the elderly.22,23 However, little is known about how oral mucosal care controls oral pathogens in the oral cavity. In order to determine an optimum control strategy for oral pathogens, such as mutants streptococci (MS) and Candida spp., which with to maintain the oral health of the elderly, Nishiyama et al. (unpublished) examined the combined role of oral mucosal care and the physical effects of professional care, as well as the effects of mucosal care as a method of reducing MS and Candida spp. in the oral cavity. During short-term and long-term care,50,51 Fifty independently living, institutionalised, elderly subjects (mean age: 78.1 ± 7.8 years) participated in the study. After treatment using professional oral care with or without mucosal care, a significant decrease in the number of MS was immediately shown after professional care was made effective in reducing collar carious with and without mucosal care.30 The results indicate that mucosal care may be more effective in controlling the number of MS on the hard tissues, such as the tooth and tongue. In addition, opportunistic infections, such as infections caused by pathogenic bacteria in the oral cavity following professional treatment. The data suggest that mucosal care is important for the prevention of dental and pneumonia.

Effects of systemic immunity on oral microbiological infection

It deteriorates not only systemic immunity, but also oral immunity because of the alternation of the oral environment, for example, a decrease in salivary enzyme and a change in saliva con- stituents. Alternation of the oral environment results in a loss of balance in commensal bacterial flora. Decreased immunity may result in infection by these micro-organisms, and because of this, surgical procedures are thought to increase the risk of infec- tion. Individuals with either inherited or acquired immune deficiency are subject to an increased risk of dental disease.32,33 Many of the protective immune responses of elderly people are impaired, which leads to an increased risk of oral bacterial infections.

Little is known about the interaction between the systemic

**Fig. 2:** The number of MS in elderly subjects with and without oral mucosal care. Number of MS detected on tooth surfaces at zero, one, four, and six months in each sample. No significant difference was shown. The results are expressed as the mean ± standard deviation of the number of MS (Spearman correlation analysis; one asterisk, *P < 0.05*).

**Fig. 3:** The correlation between oral bacteria status and NK cells. Correlation rate (R) between CD69+NK cells and numbers of total streptococci (A) or species numbers of opportunistic pathogens (B) was analysed using the Pearson product-moment correlation coefficient.
and local immune response with regard to oral infections and oral diseases. Kamoda et al. (in press) conducted an epidemiological study of the independent effect of professional oral caries, and determined the relationship between activated natural killer (NK) cells and oral bacterial infections, such as dental caries and periodontal disease. NK 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.125,126 Reports show that products prepared from leech extracts of Gram-positive bacteria, such as streptococcus, staphylococcus, and leishmania, activate human NK cells.127,128

One hundred independent elderly people aged over 77 years old (55 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 CD56, which is an early activation marker.127 The majority of CD69+9NK cells (CD16-CD56+) showed significantly elevated by the treatment (two asterisk, P < 0.05) or data after conventional control (primary data, one asterisk, P < 0.05) in comparison with the primary data of activated CD69+NK cells (Fig. 4). Therefore, it can be deduced that professional oral care may stimulate systemic immunity in the institutionalised 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 institutionalised 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 (Sma) and an important region associated with the interaction between S. mutans and salivary components. The Sma (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 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 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.

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Fig. 5: 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 (Log10/ml) of MS. Asterisks indicate significant differences between zero month and other months in the Student’s t-test (one asterisk, P < 0.05).

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