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 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+, 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

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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 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.

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. www.dental-tribune.co.uk
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.\textsuperscript{6,9} In particular, the oral hygiene of the bedridden elderly is often poor.\textsuperscript{1,5} Diminished oral health, in turn, may affect their quality of life.\textsuperscript{6,9} Moreover, microbes in microflora related to poor oral health may include an increase in the prevalence of pathogens and contribute to the development of pneumonia\textsuperscript{3} 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 reservoir for such pathogens, dental plaque can be aspirated into the lungs and cause pneumonia.\textsuperscript{6,10} Amounts of oral microflora are 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 exposure to pneumonia.\textsuperscript{11,12} Thus, professional oral care may be effective for reducing nosocomial pneumonia in institutionalised elderly.\textsuperscript{11,12} However, little is known about how oral mucosal care controls oral infections in the institutionalised elderly, and is significantly important for their quality of life and oral health.\textsuperscript{13} The data suggest that mucosal care is an important procedure for the prevention of dental caries and pneumonia.

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, two, three, and six months after professional oral care are shown. The results are expressed as the mean ± standard deviation of the number (n = 12). Mean differences between scores of months and other months in the Student’s t-test with the Bonferroni correction (one-tailed, t-test).

Dental caries and periodontal diseases are a large problem for institutionalised elderly, and a significant correlation with the presence of Porphyromonas gingivalis and MS in the oral cavity.\textsuperscript{12} The growth of P. gingivalis is associated inversely with the carriage of pathogenic bacterial species in the oral cavity.\textsuperscript{12} This indicates that humans required a certain amount of microorganisms to survive for the process of evolution in the oral cavity.

The use of antimicrobial agents for oral hygiene

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Effects of professional oral care on oral infection in the elderly

Effects of oral mucosal care on oral microbiological infection

Professional oral care with mucosal care is an important practice for maintaining the oral health of the elderly.\textsuperscript{12} However, little is known about how oral mucosal care controls oral infections in the oral cavity. In order to determine an optimum control strategy for oral pathogens, such as mutants streptococci (MS) and Candida spp., with which 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 and long-term care.\textsuperscript{12} Fifty independently living, institutionalised, elderly subjects (mean age: 86.0 ± 10.4 years old) 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 with mucosal care and at one to two months in all samples, but not following professional care without mucosal care (Fig. 2). No significant difference in total streptococci and lactobacilli was found in any samples in groups with infection, and the ratio of MS to total streptococci was not significant. Inhibition of opportunistic infection with Candida spp. was also observed in cases where oral mucosal treatment was used. Thus, it can be deduced that mucosal care may be more effective in controlling the number of MS on the hard tissues, such as the tooth and tongue, and opportunistic pathogen infections, such as Candida spp., in the oral cavity, following professional treatment. The data suggest that mucosal care is an important procedure for the prevention of dental caries and pneumonia.

Effects of systemic immunity on oral microbiological infection

It deteriorates not only systemic immunity, but also oral immunity because of an alternation of the oral environment, for example, a decrease in saliva volume and a change in saliva constituents. Alternation of the oral environment results in a lost balance in commensal bacterial flora. Decreased immunity may result in infection by these pathogens, and because of this, surgical procedures are thought to increase the risk of infection. Individuals with either inherited or acquired immune deficiency are subject to an increased risk of dental disease.\textsuperscript{3,4} 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 immunity and oral organi
Fig. 4: The 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. Asterisks denote significant differences between control (primary data, one asterisk, P < 0.05) or data after conventional oral care (two asterisks, P < 0.01) and data after professional oral care in the Student’s t-test with the Bonferroni correction.

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.

Immunohistochemical staining of BM69 + NK cells in the Student’s t-test with the Bonferroni correction.

One hundred independent elderly people aged 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 CD9, which is an early activation marker. 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 institutional 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 institutional 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 561–566 of Streptococcus mutans surface protein antigen (Pac) and an important region associated with the interaction between S. mutans and salivary components. The Pac (561–566) 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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