Scientists find someone new to target in periodontitis fight

SAN DIEGO, CA, USA: Researchers at the School of Dentistry at the University of California, Los Angeles (UCLA) in cooperation with the University of Michigan and the University of California, San Diego have identified a potential new focus of treatment for osteoporosis, periodontitis and similar diseases. Dr Cun-Yu Wang, who holds UCLA’s Dr No-Hee Park Endowed Chair in Dentistry No-Hee Park Endowed Chair in the dental school’s Division of Oral Biology and Medicine, and his team suggested that inhibiting nuclear factor-kB (NF-kB), a master protein that controls the genes associated with inflammation and immunity, can prevent disabling bone loss by maintaining bone formation.

The NF-kB protein, a culprit in inflammatory and immune disorders, plays a major role in both osteoporosis and periodontitis, disrupting the healthy balance of bone destruction and formation. “Most studies focus on the part that NF-kB plays in the regulation of osteoclasts—bone-resorbing cells. For the past five years, we looked closely at the effect of NF-kB on osteoblasts—bone-forming cells,” said Dr Wang. “We knew that NF-kB promoted resorption. What we discovered in our in vitro and in vivo studies is that this protein also inhibits new bone formation, giving us a fuller picture of its role in inflammation and immune responses.”

The findings could offer new hope to millions who fight osteoporosis and periodontitis each year. The US National Institutes of Health estimates that in the US alone more than ten million people have osteoporosis, and many more have low bone mass, putting them at risk for the disease, as well as broken bones. According to the American Academy of Periodontology, mild to moderate periodontitis affects the majority of adults, while between 5 and 20 per cent of the population suffers from advanced periodontitis.

Many available treatments work to prevent further bone loss but are not able to increase bone mass. Dr Wang’s research results support the idea that a new drug that prevents the action of NF-kB in cells may represent a major therapeutic advance.

(Edited by Claudia Salwiczek, DTI)
Leukaemia drug helpful in treating head and neck cancer

Daniel Zimmermann

LEIPZIG, Germany: A new anti-leukaemia compound, currently being studied at the Albert Einstein College of Medicine of Yeshiva University in New York City in the US, has revealed promising results for treating head and neck cancer. According to a press note released by the university last week, the new class of chemotherapy agents, known as histone deacetylase inhibitors (HDAC), succeeded in killing tumour cells that had been removed from head and neck cancer patients and grown in the laboratory.

Head and neck cancer refers to tumours originating from the upper aerodigestive tract, including the lips, oral and nasal cavity, as well as paranasal sinuses, pharynx, and larynx. It is the sixth most frequent cancer worldwide, comprising almost 50 per cent of all malignancies in some developing nations, such as India. In the US alone, approximately 50,000 new cases and 8,000 deaths are reported each year.

Until now, the common form of treatment has been radiation therapy, and in some cases also surgery or targeted therapy, which uses drugs or other substances to identify and attack specific cancer cells without harming normal cells. HDAC inhibitors, such as LBH589 tested at Einstein, appear to combat cancer by restoring the expression of key regulatory genes that control cell growth and survival to normal levels.

In addition, the researchers identified a set of genes whose expression levels change in response to the HDAC inhibitors, which could help doctors identify the patients most likely to respond to the drug. Plans call for testing LBH589 on head and neck tumour cells from more patients, so that the set of genes that respond to the drug can be more firmly established.