conferenceseries.com

23rd Global Dentists and Pediatric Dentistry Annual Meeting

July 17-18, 2017 Munich, Germany

Nature of pain associated with pre-adjusted, edgewise, orthodontic fixed-appliance treatment

Ibtesam Alzain, Waeil Batwa, Afnan Zealaiy, Shahd Sokhairi and Khalid Zawawi King Abdulaziz University, Saudi Arabia

Introduction: Pain was reported to be one of the most common complaints associated with dentistry.

Objectives: The purpose of this study was to define the nature of pain associated with orthodontic, fixed-appliance treatment and to determine its influence on patients' quality of life. Additionally, the study aimed to compare the perception of pain between adult and adolescent patients.

Materials & Methods: Patients undergoing orthodontic, fixed-appliance treatment were asked to fill out a questionnaire regarding their pain experience after an orthodontic adjustment visit. They were also asked to choose the top three words that precisely described their pain experience, using a specially developed board.

Results: In total, 111 orthodontic patients were recruited (67.6% females and 32.4% males). They generally reported moderate pain, which occurred during the first 2-6 hours after the adjustment visit. They mostly used the adjectives "tight, pressing–squeezing, and annoying" to describe their pain. Pain intensity was significantly different between patients with and without a history of headaches (p=0.024). There was no significant difference in pain perception between adults and adolescents (p=0.18). Orthodontic pain affected the patients' quality of life although the effect was perceived differently between adults and adolescents, as well as between patients with and without headaches (p=0.007 and p=0.03, respectively).

Conclusions: Moderate pain would be expected after orthodontic adjustment visits; the pain could be described as tight, pressing-squeezing, and annoying. Patients with headaches reported more pain. The pain did affect orthodontic patients' quality of life.

ioalzain@kau.edu.sa

Substrate analogue targeting glutamate racemase (MurI) alters cellular morphogenesis and inhibits biofilm formation in *Streptococcus mutans*

Jian-Ying Zhang¹ and Jun-Qi Ling² ¹Central South University, China ²Sun Yat-Sen University, China

D-Glutamate (D-Glu) is an essential biosynthetic building block of the peptidoglycans that encapsulate the bacterial cell wall. Glutamate racemase (MurI) catalyzes the reversible formation of D-glutamate from L-glutamate and, hence, the enzyme is a potential therapeutic target. The current study was designed to identify novel molecules that target glutamate racemase, thereby mitigating *S. mutans* cariogenic capacities, inhibiting biofilm formation and having the potential to prevent dental caries. High throughput screening of approximately 250 commercially available compounds against the recombinant *S. mutans* glutamate racemase resulted in the identification of a substrate-product analogue, D-glutamine, as a modest competitive inhibitor of glutamate racemase. *In vitro* assays, the addition of D-glutamine blocked the D-Glu metabolic way in *S. mutans*, leading to malformations in bacterial cell wall, inhibition of biofilm formation, and reductions in extracellular polysaccharide (EPS) synthesis without necessarily killing this bacterium directly. The exogenous addition of D-Glu could partially reverse the inhibitory effect of D-glutamine. In conclusion, these findings suggest that the substrate analogue of glutamate racemase represents a promising anticariogenic agent in that it suppresses virulence properties of *S. mutans* by affecting D-Glu metabolism.

zhjiangying_csu@hotmail.com