World Academy of Science, Engineering and Technology
International Journal of Medical and Health Sciences
Vol:18, No:04, 2024

Effect of Locally Produced Sweetened Pediatric Antibiotics on Streptococcus mutans Isolated from the Oral Cavity of Pediatric Patients in Syria - in Vitro Study

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Abstract : Objective: To evaluate the influence of sweetening agents used in pediatric medications on the growth of Streptococcus mutans colonies and its effect on the cariogenic activity in the oral cavity. No previous studies are registered yet in Syrian children. Methods: Specimens were isolated from the oral cavity of pediatric patients, then in-vitro study is applied on locally manufactured liquid pediatric antibiotic drugs, containing natural or synthetic sweeteners. The selected antibiotics are Ampicillin (sucrose), Amoxicillin (sucrose), Amoxicillin + Flucloxacillin (sorbitol), Amoxicillin+Clavulanic acid (Sorbitol or sucrose). These antibiotics have a known inhibitory effect on gram positive aerobic/anaerobic bacteria especially Streptococcus mutans strains in children's oral biofilm. Five colonies are studied with each antibiotic. Saturated antibiotics were spread on a 6mm diameter filter disc. Incubated culture media were compared with each other and with the control antibiotic discs. Results were evaluated by measuring the diameter of the inhibition zones. The control group of antibiotic discs was resourced from Abtek Biologicals Ltd. Results: The diameter of inhibition zones around discs of antibiotics sweetened with sorbitol was larger than those sweetened with sucrose. The effect was most important when comparing Amoxicillin + Clavulanic Acid (sucrose 25mm; versus sorbitol 27mm). The highest inhibitory effect was observed with the usage of Amoxicillin + Flucloxacillin sweetened with sorbitol (38mm). Whereas the lowest inhibitory effect was observed with Amoxicillin and Ampicillin sweetened with sucrose (22mm and 21mm). Conclusion: The results of this study indicate that although all selected antibiotic produced an inhibitory effect on S. mutans, sucrose weakened the inhibitory action of the antibiotic to varying degrees, meanwhile antibiotic formulations containing sorbitol simulated the effects of the control antibiotic. This study calls attention to effects of sweeteners included in pediatric drugs on the oral hygiene and tooth decay.

Keywords : pediatric, dentistry, antibiotics, streptococcus mutans, biofilm, sucrose, sugar free
Conference Title : ICOMPPP 2024 : International Conference on Oral and Maxillofacial Pathology in Pediatric Patients
Conference Location : New York, United States
Conference Dates : April 22-23, 2024