Pengaruh musik terhadap penurunan kadar mineral permukaan email pada kondisi defisiensi protein = Effect of music on the decreased enamel-surface mineral content of rat teeth with protein deficiency

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Abstrak

Proliferasi ameloblas dan sintesis matriks protein yang distimulasi oleh hormon pertumbuhan (GH) mempengaruhi proses mineralisasi email. Protein defisiensi mengakibatkan hipoplasia email dan penurunan kadar GH. Pada manusia, paparan musik dapat meningkatkan kadar GH. Tujuan: Menganalisis efek paparan musik sejak pranatal terhadap penurunan kadar kalsium (Ca) dan fosfor (P) permukaan gigi tikus dengan defisiensi protein. Eksperimen: Tiga-puluh-dua ekor tikus Wistar dibedakan menjadi kelompok dengan dan tanpa paparan musik. Paparan musik diberikan sejak masa-gestasi hari pertama sampai anak tikus diterminasi, diberikan setiap pagi (musik pengantar tidur) dan sore hari (musik klasik, barok, romantik). Sejak usia 2 hari secara acak sederhana anak tikus dibedakan menjadi kelompok dengan nutrisi normal mengandung protein 19.5% dan dengan asupan protein 7.5%. Mandibula 6 anak tikus dari masing-masing kelompok perlakuan yang diterminasi pada usia 2 dan 5 minggu dikeluarkan, dibelah menjadi setengah mandibula, dibersihkan, dikeringkan, dan digunakan untuk pengukuran persentase kadar Ca dan P permukaan email insisif bawah menggunakan metode Energy Dispersive X-ray (EDX). Data dianalisis menggunakan uji ANOVA satu arah dengan á 0.05. Hasil: Pada usia 2 minggu, kadar Ca (8.6%) dan P (10.6%) permukaan email tikus dengan nutrisi normal dan paparan musik lebih tinggi dari Ca (3.9%) dan P (7.9%) email tikus dengan defisiensi protein tanpa musik (P<0.029). Pada tikus 5 minggu dengan defisiensi protein, kadar P (6.1%) email tikus dengan paparan musik, lebih tinggi dari kadar P email (2.8%) tikus tanpa musik (P<0.034). Kesimpulan: Musik memiliki potensi untuk meminimalkan penurunan kadar Ca dan P permukaan email pada kondisi defisiensi protein.

.....Protein deficiency could lead to enamel hypoplasia and decreased level of Growth Hormone (GH). Cell proliferation and synthesis of enamel-matrix which affect the mineralization process of the tissue, are stimulated by GH. Music was reported to be able to increase GH. Objective: Analyzing the effect of music exposure since prenatal on the decreased Calcium (Ca) and Phosphor (P) content of the enamel-surface of rat-pups in protein-deficiency condition. Experiment: Thirty-two rats on the first day of gestation period were divided into groups with and without music. Music were given twice daily, lullabies every early morning, and classic, baroc, and romantic music every evening. At 2-days-old the rat-pups were further divided into groups with normal diet contained 19.5% protein, and groups with protein deficiency diet contained 7.5% protein. At 2- and 5-weeks-old, 6 rat pups from each group were randomly terminated, the mandibles were dissected out, cut into hemi-mandibles, cleaned, and dried. The percentage of Ca and P content of the lower-incisor enamel-surface was analyzed using Energy Dispersive X-ray (EDX), data were analyzed using One Way ANOVA with 0.05. Results: At 2-weeks-old, the Ca (8.6%) and P (10.6%) contents of enamel-surface of pups with normal-diet and music were higher than the Ca (3.9%) and P(7.9%) contents of enamel-surface of pups with protein-deficiency with no music (P<0.029). Among 5-weeks-old pups with protein-deficiency, the P content (6.1%) of enamel-surface of pups with music were higher than P content (2.8%) of enamel-surface of pups with no music (P<0.034). Conclusion: Music has a potency to

minimize the decreased Ca and P enamel content on the protein deficiency condition.