Analisis Perkembangan Gigi (Odontogenesis) pada Mencit Strain C57BL/6 Usia Satu Hari = Analysis of Teeth Development Process (Odontogenesis) in One-Day-Old C57BL/6 Mice

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Abstrak

Latar Belakang: Setiap tahap odontogenesis yang tidak berjalan dengan baik semestinya dapat mengakibatkan terjadinya abnormalitas pada gigi, hal tersebut dipengaruhi oleh beberapa faktor atau komponen tertentu seperti gen, nutrisi, mineral, molekul, atau lainnya. Untuk memahami proses terjadinya abnormalitas serta faktor-faktor yang memengaruhinya, perlu diketahui secara spesifik setiap tahapan perkembangan gigi. Penelitian terkait perkembangan gigi pada manusia tidak memungkinkan karena diperlukan tindakan yang invasif dalam pengambilan sampel jaringan. Oleh sebab itu, digunakan hewan coba mencit C57BL/6 karena merupakan jenis inbred dan banyak digunakan dalam penelitian biomolekuler. Namun, hingga saat ini penelitian mengenai odontogenesis pada mencit C57BL/6 masih sangat terbatas. Tujuan: Menganalisis perkembangan gigi (odontogenesis) mencit strain C57BL/6 usia satu hari. Metode: Rahang mencit C57BL/6 dipotong menjadi 4 bagian. Setelah itu, dilakukan pembuatan preparat dengan potongan longitudinal (sagital) pada maksila dan mandibula kanan dan potongan koronal (frontal) pada maksila dan mandibula kiri, serta dilakukan pewarnaan hematoksilin dan eosin (H&E) pada preparat dan dilakukan pengamatan benih gigi insisif dan molar rahang atas dan rahang bawah menggunakan mikroskop. Hasil: Terlihat benih gigi insisif, molar pertama, molar kedua, dan molar ketiga pada jaringan maksila dengan potongan transversal atau axial dan terlihat adanya benih gigi molar pada preparat jaringan maksila dan mandibula dengan potongan koronal. Pada jaringan mandibula dengan potongan longitudinal atau sagital hanya terlihat adanya benih gigi insisif. Kesimpulan: Terjadi proses odontogenesis hingga tahap awal bell stage pada gigi molar maksila kiri dan mandibula kiri mencit C57BL/6 usia satu hari, sehingga mencit C57BL/6 usia satu hari dapat dijadikan alternatif objek penelitian dalam menganalisis perkembangan struktur jaringan gigi baik pada kondisi normal maupun patologis.
.....Background: Disruption in the stages of odontogenesis results in teeth abnormalities. These conditions can be influenced by certain factors or components such as genes, nutrients, minerals, molecules, or others. To understand the process of abnormality and the factors that influence it, it is necessary to know specifically each stage of tooth development. Research related to the development of teeth in humans is not possible because it requires an invasive procedure in tissue sampling. Therefore, C57BL/6 mice were used as experimental animals because they are an inbred species and are widely used in biomolecular research. However, until now research on odontogenesis in C57BL/6 mice is still very limited. Objective: Analyzing tooth development (odontogenesis) in one-day-old C57BL/6 mice. Methods: The jaws of C57BL/6 mice were cut into 4 parts. After that, preparations were made with longitudinal (sagittal) sections on the right maxilla and mandible and coronal (frontal) sections on the left maxilla and mandible, and stained with hematoxylin and eosin (H&E) on the preparations and observation of the maxillary and mandibular incisors and molars using a microscope. Results: Tooth germs of incisors, first molars, second molars, and third molars were observed in the maxillary tissue with transverse or axial sections and the presence of molars in the maxillary and mandibular tissue preparations with coronal sections. In mandibular tissue with

longitudinal or sagittal sections, only incisor germs were seen. Conclusion: The odontogenesis of one-day-old C57BL/6 mice in this study were observed in the early bell stage both in the left maxillary and left mandibular molars. Based on this study, one-day-old C57BL/6 mice can be used as an alternative object of research in analyzing the tooth structure that have been developed in the early bell stage, both normal and pathological conditions.