

# Hubungan Polimorfisme Gen AMELX, ENAM, dan AMBN dengan Penderita Karies: Systematic Review dan Meta-Analysis = Association of AMELX, ENAM, and AMBN gene Polymorphisms with Dental Caries: A Systematic Review and Meta-Analysis

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## Abstrak

Latar belakang: Karies gigi merupakan penyakit gigi multifaktorial yang dipengaruhi oleh banyak faktor. Salah satunya adalah peran genetik. Banyak penelitian mengenai hubungan antara peran genetik kerentanan karies gigi telah dilakukan, terutama polimorfisme gen pada gen gigi tertentu.

Tujuan: Untuk memperkirakan kemungkinan asosiasi gen amelogenin (AMELX) dan non-amelogenin (ENAM dan AMBN) terhadap kerentanan karies gigi berdasarkan populasi.

Metode: Enam database elektronik, terdiri dari: PubMed, Scopus, EBSCO, Cochrane Library, ScienceDirect, dan Wiley Online Library dilakukan secara rumit sebagai pencarian data lanjutan untuk tanggal publikasi hingga Februari 2019. Proses menyeluruh dalam studi ulasan ini dilakukan dengan menggunakan Preferred Item pelaporan untuk pedoman Tinjauan Sistematis dan Meta-analisis (PRISMA). Bagian meta-analisis diimplementasikan dengan menggunakan dua perangkat lunak: Review Manager 5.4 dan Comprehensive Meta-analysis 2.0.

Hasil: Empat belas studi termasuk dalam analisis kualitatif (tinjauan sistematis) dan kuantitatif (meta-analisis). Hasil analisis kuantitatif menyimpulkan bahwa ENAM rs3796704 berhubungan sebagai faktor protektif terhadap kerentanan karies gigi, terutama pada alel A (OR=0,7; p-value=0,009), genotipe AG (OR=0,7; p-value=0,03), dan genotipe AA (dominan) (OR=0,7; p-value=0,02). ENAM rs3796704 juga memiliki faktor protektif yang signifikan terhadap karies gigi pada etnis Kaukasia dan kelompok usia anak-anak. Namun, tidak ada hubungan bermakna antara AMELX rs946252, AMELX rs17878486, AMELX rs6639060, AMELX rs2106416, ENAM rs1264848, ENAM rs3796703, AMBN rs4694075, dan AMBN rs34538475 terhadap kerentanan karies gigi.

Kesimpulan: ENAM rs3796704 memiliki hubungan yang signifikan terhadap kerentanan gigi karies.

.....Background: Dental caries is a multifactorial dental disease that is influenced by many factors. One of them is genetic role. Many studies regarding the association between genetic roles dental caries susceptibility have been conducted, especially gene polymorphisms in certain dental genes.

Aim: estimate the possible association of amelogenin (AMELX) and non-amelogenin (ENAM and AMBN) genes to dental caries susceptibility in population-based.

Methods: Six electronic databases, consist of: PubMed, Scopus, EBSCO, Cochrane Library, ScienceDirect, and Wiley Online Library are carried out intricately as data advanced searches for publication date until

February 2019. The thorough process in this review study is carried by using the Preferred Reporting items for Systematic Reviews and Meta-analyses (PRISMA) guideline. The meta-analysis part is implemented by using two softwares: Review Manager 5.4 and Comprehensive Meta-analysis 2.0.

Results: Fourteen studies are included in both qualitative (systematic review) and quantitative (meta-analysis) analyses. The result of the quantitative analysis concluded that ENAM rs3796704 is associated as protective factor to dental caries susceptibility, especially in allele A (OR=0.7; p-value=0.009), genotype AG (OR=0.7; p-value=0.03), and genotype AA (dominant) (OR=0.7; p-value=0.02). ENAM rs3796704 also has a significant protective factor to dental caries in caucasian ethnicity and children age group. However, there was no significant association of AMELX rs946252, AMELX rs17878486, AMELX rs6639060, AMELX rs2106416, ENAM rs1264848, ENAM rs3796703, AMBN rs4694075, and AMBN rs34538475 to dental caries susceptibility.

Conclusion: ENAM rs3796704 plays a significant association to dental caries susceptibility.