Ekspresi gen beta defensin 30 defb30 di epididimis mencit pada proses perkembangan postnatal, regulasi oleh androgen dan faktor testikular = Expression of defensin beta 30 defb30 gene in mouse epididymis in postnatal development and its regulation by androgen and testicular factors

Annisa Parisudha, author

Abstrak

ABSTRAK
Latar Belakang : Proses pematangan spermatozoa terjadi melalui interaksi spermatozoa dengan protein yang disekresikan ke lumen oleh sel-sel epitel epididimis. Sekresi protein akan menciptakan lingkungan yang mendukung proses pematangan spermatozoa. Namun gen penyandi protein yang terlibat dalam proses pematangan spermatozoa di epididmis masih belum banyak diketahui. Berdasarkan penelitian sebelumnya, gen-gen yang terlibat dalam proses pematangan spermatozoa ini memiliki kriteria antara lain protein sekretori, terekspresi spesifik di epididimis, dan menunjukkan eskpresi regional, diregulasi oleh faktor androgen dan faktor testikular. Defb30 merupakan salah satu gen yang perlu dilakukan karakterisasi lebih lanjut untuk mengetahui apakah gen tersebut memenuhi kriteria sebagai gen yang terlibat dalam proses pematangan spermatozoa. Tujuan dari penelitian ini adalah untuk melakukan karakterisasi gen Defb30 pada epididimis mencit.Desain : Penelitian ini menggunakan analisis bioinformatika dan Quantitative real-time PCR qRT-PCR .Metode : Analisis bioinformatika digunakan untuk memprediksi struktur gen, sinyal peptida dan domain fungsional. Analisis qRT-PCR digunakan untuk mengukur ekspresi relatif gen Defb30 terhadap analisis sebaran jaringan, regulasi terhadap androgen dan faktor testikular serta postnatal development.Hasil : Analisis sinyal peptida menggunakan signalP 4.1 menunjukkan bahwa Defb30 merupakan protein sekretori. Defb30 terekspresi secara spesifik di epididimis dan memiliki nilai spesifitas tinggi di bagian kaput epididimis. Ekspresi relatif gen Defb30 diregulasi oleh faktor endokrin berupa androgen, penurunan ekspresi relatif gen Defb30 terlihat pada hari pertama hingga hari ketiga gonadektomi dan testosteron diketahui mampu mencegah penurunan ekspresi Defb30 pada mencit yang telah digonadektomi. Analisis eksperimen efferent duct ligation menunjukkan gen Defb30 diregulasi oleh faktor testikular. Analisis postnatal development menunjukkan bahwa gen Defb30 mulai terekspresi pada hari ke-15 postnatal dan meningkat hingga usia dewasa.Kesimpulan : Defb30 merupakan protein sekretori yang terekspresi spesifik pada kaput epididimis dan diregulasi oleh androgen dan faktor testikluar.
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ABSTRACT
Background The process of sperm maturation occurs through interaction between sperm and proteins secreted by epididymal epithelial cells. The secretion of proteins will create micro environment suitable for spermmaturation. However, the role of protein encoding genes involved in the maturation process are not widely known. Based on previous studies the genes that are involved in spermmaturation process have characteristics such as secretory protein, specific expression in the epididymis and shows region specific expression, regulated by androgen and testicular factors. Defb30 is one of the genes that need further characterization to determine the putative function. Therefore, this study was aimed to characterize

expression and regulation of Defb30 in the mouse epididymis.Methods Bioinformatics analysis was used to predict the structure of genes, peptide signals and functional domains. qRT PCR analysis was performed to measure the level of Defb30 expressionin the tissue distribution, regulation of andorgen and testicular factors and postnatal development.Result Peptide signal analysis using signalP 4.1 indicated that Defb30 was a secretory protein. Defb30 was expressed exclusively in the epididymis and had a high specificity in the caput. The expression of the Defb30 gene was regulated by androgen in which decreased of Defb30 expression was observed at the first day to the third day of gonadectomy and exogenous T was able to maintain Defb30 expression at 3d and 5d gonadectomized mice. efferent duct ligation showed that Defb30 was slightly regulated by testicular factors. Defb30 was developmentally regulated being expressed start at day 15 postnataly.Conclusions Defb30 is a secretory protein which is expressed specifically in the caput epididymis and it is regulated by androgen and testicular factors.