

# Association of vitamin D receptor gene polymorphisms with hypertensive disorder in pregnancy: A quest for novel biomarkers

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## ABSTRACT

**Introduction:** Hypertensive disorders in pregnancy (HDiP) accounted for approximately 14% of maternal and neonatal mortalities worldwide. Inheritance of defective vitamin D receptor (VDR) gene is thought to significantly affect vitamin D molecular signaling, thereby contributing to the development of HDiP. **Objective:** This study aimed to determine the association of VDR gene polymorphisms and the risk of developing HDiP among Malay pregnant women. **Materials and Methods:** This case-control study involved 88 HDiP and 139 normotensive pregnant women with inadequate vitamin D level. Blood was collected for vitamin D status and genetic studies. Deoxyribonucleic acid (DNA) was extracted from peripheral blood monocytes. Serum 25(OH)D3 level was analysed using electrochemiluminescence immunoassay while VDR variants (FokI, BsmI, and TaqI) were determined using polymerase chain reaction-high-resolution melting (PCR-HRM) and Sanger sequencing. **Results:** FokI FF homozygous wild-type genotype and FokI Ff heterozygous were found to be more common among normotensive subjects. In comparison, subjects carrying the ff homozygous mutant genotype was higher in the HDiP cohort (91%) than in the normotensive cohort (9.0%). The F allele exhibited a protective effect against HDiP (61.7% vs. 38.3%). Similarly, homozygous wild-type BsmI BB genotype and heterozygous Bb genotype were higher in normotensive subjects as compared to BsmI bb homozygous mutant which was found to be higher in HDiP subjects. TaqI TT homozygous wild type was also found to be higher in normotensive subjects, while higher tt homozygous mutant in HDiP subjects was seen. **Conclusions:** The present study provides evidence on the role of vitamin D receptor genetic and the risk of developing HDiP among Malay population. Hence, there is a need to consider policies such as VDR gene variant screening and personalised vitamin D supplementation strategies during early pregnancy.