

Pengaruh Seng, Beta-Carotene dan Vitamin D3 terhadap regulator inflamasi kelahiran preterm: Kajian ekspresi protein adaptor MYD88 dan TRIF, aktivitas faktor transkripsi NF- κ B, dan Sitokin Proinflamasi IL-1 = Role of Zinc, Beta-Carotene, and Vitamin D3 towards inflammatory regulator of preterm birth: The study of expression of adaptor protein MYD88 and TRIF, activity of transcription factor NF- κ B and Pro-Inflammatory Cytokine IL-1;

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Abstrak

Kelahiran preterm masih merupakan masalah global. Penyebab kelahiran preterm bersifat multifaktor, di antaranya adalah proses inflamasi dan status nutrisi yang dipengaruhi oleh mikronutrien seperti seng, vitamin A dan D. Penelitian ini bertujuan mengetahui pengaruh seng, AtRA dan 25(OH)D pada regulasi respons inflamasi pada kelahiran preterm melalui pemeriksaan MyD88, TRIF, NF- κ B dan IL-1. Desain kuasi eksperimental dilakukan selama periode Januari-Juni 2017 di RSUPN-CM dan RS Budi Kemuliaan, Jakarta. Subjek dibagi menjadi kelompok aterm (n=25), preterm kontrol (n=27), dan preterm perlakuan (n=26). Kelompok preterm perlakuan diberikan secara oral seng 50 mg/hari, beta-carotene 25.000 IU, dan vitamin D₃ 50.000 IU/minggu. Seluruh subjek dilakukan wawancara, pengukuran konsentrasi seng, AtRA dan 25(OH)D serum dan plasenta, serta kadar MyD88, TRIF, NF- κ B dan IL-1 plasenta. Pada kelompok aterm konsentrasi AtRA serum dan plasenta lebih tinggi dibandingkan kelompok lain. Pada kelompok preterm perlakuan, tidak didapatkan adanya perbedaan bermakna konsentrasi seng, AtRA dan 25(OH)D serum sebelum dan sesudah perlakuan. Ekspresi NF- κ B dan TRIF lebih rendah pada kelompok aterm dan preterm kontrol, dibandingkan kelompok preterm perlakuan. Konsentrasi IL-1 ditemukan paling tinggi pada kelompok aterm. Konsentrasi seng, AtRA dan 25(OH)D plasenta memiliki korelasi positif sedang dengan IL-1.

Simpulan: Konsentrasi seng, AtRA dan 25(OH)D plasenta yang rendah berhubungan dengan lebih tingginya ekspresi MyD88, TRIF, NF- κ B dan IL-1 pada kelahiran preterm. Pemberian seng, beta-carotene dan vitamin D₃ berhubungan dengan IL-1 yang lebih rendah.

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Preterm birth is still a global burden. Inflammation process and nutritional status are among its multifactorial etiology which is affected by micronutrient such as vitamin A, D and zinc. Quasi-experimental design was conducted to know the role of zinc, beta-carotene and vitamin D₃ towards inflammatory regulator of preterm birth during January-June 2017 in RSUPN-CM and Budi Kemuliaan Hospital, Jakarta. Subjects were classified into term (n=25), control preterm (n=27), and experimental preterm group (n=26). Subjects in experimental preterm group were given orally zinc 50 mg/day, beta-carotene 25,000 IU and vitamin D₃ 50,000 IU/week. Nutrient intake interview, measurement of zinc, AtRA and 25(OH)D level in serum and placenta was performed in all subjects, also placental concentration of MyD88, TRIF, NF- κ B dan IL-1. The term group had higher AtRA concentration in serum and placenta. No significant difference of serum zinc, AtRA and 25(OH)D

concentration was found in treated group before and after intervention. The term and control preterm groups had lower expression of NF- κ B and TRIF compared to the experimental group. The concentration of IL-1 β was highest among term group. Placental concentration of zinc, AtRA and 25(OH)D had moderate positive correlation with IL-1 β .

Conclusion: Lower placental concentrations of zinc, AtRA and 25(OH)D relate to higher expression of MyD88, TRIF and NF- κ B. The supplementation of zinc, beta-carotene and vitamin D₃ relate to lower expression of IL-1 β .