ABSTRAK

Derisna C.S, Anak Agung. 2014. **Pengaruh Vaksin *Heat Killed Salmonella* Typhimurium Terhadap Kadar *Tumor Necrosis Factor Alpha* (TNF-α) Serum pada Tikus Wistar Jantan yang Diberi Diet Tinggi Lemak**. Tugas Akhir, Fakultas Kedokteran Universitas Brawijaya. Pembimbing: (1) Dr. Dra. Sri Winarsih, Apt, MSi. (2) dr. I Putu Adi Santosa, Sp.PK.

Salmonella Typhimurium yang menyintesa *phosphorylcholine* (PC) mampu menginduksi respon antibodi anti-PC yang bereaksi silang dengan PC pada *oxidized* lipoprotein (Ox-LDL). Tujuan dari penelitian ini untuk mengetahui efek pemberian vaksin *heat killed* bakteri *Salmonella* Typhimurium dalam menurunkan kadar TNF-α serum pada tikus yang diberi diet tinggi lemak. Penelitian ini merupakan penelitian eksperimental laboratorik. Vaksin dibuat dengan cara memanaskan 10^8 bakteri *S.* Typhimurium pada suhu 100^0 C selama 45 menit di atas *waterbath.* Dua puluh lima ekor tikus jantan galur Wistar sebagai hewan coba, dibagi ke dalam satu kelompok kontrol negatif (diet normal) dan empat kelompok perlakuan diet tinggi lemak terdiri dari kelompok kontrol positif (tanpa vaksinasi), kelompok A (vaksin 100 μl ditambah ajuvan CFA-IFA 100 μL), kelompok B (vaksin 100 μL), dan kelompok C (ajuvan CFA-IFA 100 μL). Vaksin diinjeksikan dua minggu sekali sebanyak lima kali, dan terdiri atas injeksi primer dan empat injeksi *booster*. Hasil penelitian menunjukkan bahwa pemberian vaksin *heat killed S.* Typhimurium ditambah CFA-IFA dapat menurunkan jumlah kadar TNF-α serum secara signifikan dibanding kelompok kontrol positif ($p < 0,05$). Kesimpulan penelitian adalah pemberian vaksin *heat killed Salmonella* Typhimurium dengan ajuvan CFA-IFA terbukti menurunkan kadar TNF-α serum sebagai sitokin proinflamasi. TNF-α adalah sitokin proinflamasi yang mempunyai peranan dalam progesivitas sindroma metabolik. Perlu dilakukan penelitian lebih lanjut mengenai potensi *heat killed S*. Typhimurium untuk mencegah progesivitas sindroma metabolik.

Kata kunci: *vaksin*, *Salmonella* Typhimurium, TNF-α

ABSTRACT

Derisna C.S, Anak Agung. 2014. **Effect of Vaccine Heat Killed *Salmonella* Typhimurium towards levels of Serum Tumor Necrosis Factor Alpha (TNF-α) in Male Wistar Rats Given by High Fat Diet**. Final Assignment, Facultyl of Medicine University of Brawijaya. Supervisors: (1) Dr. Dra. Sri Winarsih, Apt, MSi. (2) dr. I Putu Adi Santosa, Sp.PK.

Salmonella Typhimurium that synthesize *phosphorylcholine* (PC) was able to induce anti-PC antibody responses that cross-react with the PC on oxidized lipoprotein (Ox-LDL) .The purpose of this study was to determine the effect of heat killed bacteria vaccine *Salmonella* Typhimurium in lowering levels of serum TNF-α in rat fed by high fat diet. This study was an experimental research laboratory. The vaccine was made by heating 10^8 *S*. Typhimurium bacteria at temperature of 100°C for 45 minutes on the waterbath. Twenty five male Wistar rats as experimental animals, divided into the negative control group (normal diet) and four treatment groups high fat diet consisting of the positive control group (without vaccination), group A (vaccine 100 µl plus CFA-IFA adjuvant 100 µL), group B (vaccine 100 µL), and group C (CFA-IFA adjuvant 100 µL). The vaccine was injected five times every two weeks, where the vaccine consist of primary injection and four booster injection. The results showed that administration of heat killed *S*. Typhimurium vaccine plus CFA-IFA can lower the amount of serum levels of TNF-α significantly to the positive control group ($p < 0,05$). The conclusion is the research proved that heat killed *Salmonella* Typhimurium vaccine with CFA-IFA adjuvant decreases TNF-α serum which are proinflammantory cytokine. TNF-α is proinflammantory cytokine which has a role in the progression of metabolic syndrome. Further researches about the potential of heat killed *S*. Typhimurium towards the prevention of the progression of metabolc syndrome are needed to be conducted.

Keywords: *vaccine*, *Salmonella* Typhimurium, TNF-α