

TRAFFIC OF ANTIBODY SECRETING CELLS IN THE BLOOD CIRCULATION AFTER ORAL CHOLERA VACCINATION

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ABSTRACT

The kinetics of antigen-specific antibody secreting cells (ASC) in the blood circulation elicited by an oral cholera vaccine made up of three *Vibrio cholerae* antigens, *i.e.* lipopolysaccharide (LPS), recombinant toxin-coregulated pili A (TcpA), and heat-treated-cholera toxin (H-CT) in the presence of unmethylated bacterial CpG DNA (ODN#1826) were examined by enzyme linked-immunospot (ELISPOT) assay and serum antibody assays. Eight-week-old Wistar rats were orally primed and boosted with the vaccine at 14 day interval, whereas control rats received placebo (5% NaHCO₃). At days 2, 3, 4, 5, 6, 13, and 21 after the vaccine booster, the numbers of antigen-specific antibody secreting cells (ASC) in the blood circulation and in lamina propria were enumerated by ELISPOT assay and immunofluorescent antibody test (IFA), respectively, and also serum antibodies were detected by ELISA and vibriocidal assay.

All antigen-specific ASC were detected as early as 2 days after the booster immunization, reached the maximum numbers on day 3 for anti-LPS ASC and anti-TcpA ASC and day 4 for anti-CT ASC, and then declined markedly. No ASC was detected in the blood at day 13 (times between days 6 and 13 were not studied). The numbers of antigen specific ASC in the lamina propria were inversely correlated with the numbers in the blood. There were some ASC of all antigenic specificity in intestinal lamina propria at day 3. The numbers were increased on days 7 and 14. The

vaccine seemed to confine the immune response to mucosal lymphoid tissue, as 52.4%, 14%, 19%, and 57.1% of vaccinated rats could elicit serum ELISA anti-CT, anti-LPS, anti-TcpA, and serum vibriocidal antibody, respectively, while all of them developed mucosal immune response. Thus, data on the kinetics of specific ASC can be used as an indicator of vaccine response in primed-animals, the condition that emulates the natural condition of people in the cholera endemic areas. This kind of study gives information on how soon after taking the vaccine, the effector mechanism would be operated and ready to protect the host.

KEY WORDS: ANTIBODY-SECRETING CELL/ ORAL CHOLERA VACCINE

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