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Acute Phase Reactants; what are they? And, why we should be concerned about them?

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Pollowing tissue damage, infection, or physical trauma, a series of reactions occur in the host to prevent further injury, isolate and eliminate the infecting agent, and to activate repair processes that eventually allow the organism to return to normal function. This homeostatic process is inflammation, and the initial and immediate set of responses induced is the Acute Phase Response [APR]. To contribute to the host defense, altered biosynthetic profile of the liver in which certain proteins, the acute phase reactants (APRs), are expressed at higher levels. Acute phase reactants which are used in the assessment of inflammation includes; C-reactive proteins, haptoglobin, fibrinogen, serum amyloid, albumin (negative acute phase response), pro-inflammatory cytokines (IL-1b, IL-6, and TNF α), α 1-acid glycoprotein (α 1AGP), α 2-macroglobulin (α -2M), and thiostatin. The suitability of each APR as a marker of inflammation depends upon certain criteria. A long with the measurement of the inflammatory cells, food consumption, body weight, and changes in body temperature should also be considered. These preclinical toxicology endpoints are the counterparts for inflammation and pain at the site of injection, malaise, fatigue, and slight febrile responses which may be produced by vaccines in a clinical study. Proper design and techniques (e.g., validating sample collection time points for specific proteins, proper selection of animal species... etc.) used in any pre-clinical toxicology study for vaccines should be carefully considered.

Biography

Dr. Nabil Al-Humadi currently works as a pharmacologist at the Center of Biologics in the US Food and Drug Administration. Dr. Al-Humadi holds two master degrees and a Ph.D. and has 18 years' work experience in the government and 7 years in the industry. Dr. Al-Humadi presented more than 50 posters in scientific meetings and published more than 10 papers in peer reviewed journals. His current publication is chapter "pre-clinical toxicology of vaccines" in "comprehensive guide to toxicology in preclinical drug development" book.

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