Pyrogenic Contamination Testing for Small Volume Parenteral Pharmaceuticals

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Abstract

Small Volume Parenteral (SVP) can be injected intravenously, into human muscle, or used as vena injection in human blood vessel with the addition of Large Volume Parenteral (LVP). Therefore the quality of the parenteral pharmaceutical must be aseptic or free from pyrogenic contamination. If the SVP was contaminated or pyrogenic, patient will have a serial physical reaction after injection, such as fever, coldness, hypotension, shock, abnormal organ metabolism, or even death in more serious cases. Pyrogenic contamination is mainly composed of endotoxin, about 90% of which is lipopolysaccharide (LPS) from gram-negative bacteria. The purpose of this study is to monitor the SVP in vitamin products and existing generic pharmaceuticals. Total of 324 samples were collected by the local health authorities from hospitals, clinics, pharmacies and manufacturers from 21 counties in Taiwan. 290 samples (89.5%) were produced by local manufacturers (30 factories) and 34 (10.5%) were imported (17 factories). The pyrogenic contamination test method was based on the Chinese Pharmacopoeia V, including the *in vivo* Progen Test, using rabbit ear injection to measure rectal temperature, and the *in vitro* Bacterial Endotoxin Test, using Limulus Amebocyte Lysate Gel-Clot method (LAL test) for testing endotoxin contamination. The resut showed 27 rabbit pyrogen tests and 297 Gel-Clot LAL tests met the pyrogenic contamination guidelines.

Key Words: small volume parenteral, pyrogenic contamination, pyrogen test, bacterial endotoxin test