

Reinventing blood safety

August 27-28, 2002 from 17:00 to 19:00
ISBT 27th Annual Congress, 2002
Poster Presentation

Interference of Maize Starch, a Dust Used as a Lubricant of Sanitary Gloves, on Analytical Results of NAT Test

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Background:

The lubricant dust used to facilitate wearing of sanitary gloves is a modified maize starch. According to authoritative studies, the aerial pollution of environment due to the presence of maize starch-based dust may give rise to interference resulting in false negative for PCR and antibodies screening tests. In the investigators' opinion, maize starch seems to work by absorption of large molecules, like immunoglobulins, leading to a test sensitivity decreased in an uncontrolled way. In addition, maize starch seems to induce pseudo-precipitations and subsequent agglutinations which may lead to misinterpreted results. In the practice, positive low-titer sample risks to give false negative results due to unwillingly maize starch introduced in the reaction tubes when gloves are worn or unworn.

Methods:

The possible interference by gloves' maize dust was assessed during the phase of amplification of nucleic acids by transcription-mediated amplification, as provided by the Procleix HIV-1/HCV Assay. We tested samples weakly positive for HIV-1 and HCV RNA, either in the presence or in the absence of dust. Changes of detection signals (ratio) are reported in the following table.

| HIV | Undiluted | 1/10 | 1/20 | 1/30 | 1/40 | 1/50 |
|--------------|-----------|-------|-------|-------|-------|------|
| Without dust | 23.81 | 20.99 | 11.01 | 10.47 | 11.02 | 9.94 |
| With dust | 14.99 | 8.43 | 4.01 | 0.72 | 0.24 | 0.18 |

| HCV | Undiluted | 1/10 | 1/20 | 1/30 | 1/40 | 1/50 | 1/320 | 1/640 |
|--------------|-----------|-------|-------|-------|-------|-------|-------|-------|
| Without dust | 10.74 | 10.80 | 10.35 | 10.59 | 10.25 | 10.13 | 10.25 | 9.6 |
| With dust | 10.14 | 9.51 | 8.64 | 9.48 | 8.8 | 9.4 | 8.51 | 7.42 |

Conclusion:

When gloves without dust are not available to perform molecular amplification or antibodies screening test, the experts suggest to wash hands while wearing gloves, in order to remove any possible dust deposited on gloves' surface. High concentrations of dust interfere significantly with the process of HIV-RNA amplification, resulting in false negative results. The inhibition of HCV-RNA amplification is less marked.