

# DETECTION OF HUMAN ENTERIC VIRUSES AND INTESTINAL PARASITES BY USING FLUORO-IMMUNOMAGNETIC SEPARATION IN RAW WATER

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Enteric viruses as well as intestinal parasites are microscopic agents that are normally found in water and have high affinity for epithelial cells, being commonly associated with the production of gastroenteritis. They have an external morphostructure based on proteins present mainly in their capsid and cell wall, respectively, which makes them quite resistant to water disinfection. In addition, these two agents have in common that they are highly diluted in water, making their analysis in the laboratory complex. Due to a single particle of a virus or a parasite, is enough to produce disease, it is necessary to develop and apply effective methods that allow its easy detection in water. For this reason, the objective of this investigation was to detect the presence of the enteric virus Hepatitis A (VHA) and the intestinal parasite *Giardia lamblia* in raw water from the northern department of Santander, Colombia. For this purpose, the fluoro-immunomagnetic separation (FIMS) technique was applied. This technique is based on the use of magnetic microparticles with fluorescent core, which are functionalized with highly specific monoclonal antibodies. Magnetic property is used to concentrate and separate virions and cysts, while fluorescence is used to visualize the presence of pathogens in water samples through the antigen-antibody interaction. RT-PCR was the molecular identification technique selected for viral identification, while fluorescence microscopy was used for the parasites. The results allowed determining the presence of the two pathogens in all the samples of raw water analyzed with a limit of detection of 10 virus or parasites in just 3 hours. Therefore, it was concluded that fluoroimmunomagnetic technique is highly efficient to concentrate, separate and detect enteric pathogens in water.

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