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Detection of hepatitis A virus (HAV) in fresh fruits, vegetable, wastewater and manure from irrigated farms in Ouagadougou, Burkina Faso

Kuan Abdoulaye TRAORE[1,2], Stéphanie GORA[2], Madou SANOU[2], Jean Bienvenue OUOBA[2], Lalidia Bruno OUOBA[2], WP Bertrand TIENDREBEOGO[2], Pierre ROQUES[3], Nicolas BARRO[2]

[1]Laboratoire Sciences de la Vie et de la Terre (LaSVT), Université Norbert ZONGO (UNZ), 376 Koudougou, Burkina Faso; kuabtraore@live.fr (K.A.T.)

[2]Laboratoire de Biologie Moléculaire, d'Epidémiologie et de Surveillance des Bactéries et Virus Transmissibles par les Aliments (LaBESTA), Université Joseph KI-ZERBO (UJKZ), 7021 Ouagadougou, Burkina Faso; gorastephy93@gmail.com (S.G.); begsonsanou@yahoo.com (M.S.); maitreouob@gmail.com (J.B.O.); brunoouoba@gmail.com (L.B.O.) ; patricktrand@gmail.com (W.P.B.T); nicolas.barro@ujkz.bf (N.B.)

[3]Virology Unit, Institut Pasteur de Guinée (IPGui), 4416 Conakry, Guinea. pierre.roques@pasteur.fr (P.R.)

Corresponding author: (K.A. TRAORE). LaSVT/EDST/ UNZ de KDG/Burkina Faso; BP 376; Email: kuabtraore@live.fr

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ABSTRACT

Objectives: Hepatitis A virus (HAV) has been detected as causal agent in several epidemics associated with fruit and vegetables consumption. The aim of the present study was to assess the presence of HAV in fruit and vegetables, manure and irrigation wastewater used in the urban and peri-urban irrigated plots of Ouagadougou.

Methodology and Results: A total of 288 samples including 30 lettuces, 42 tomatoes, 32 carrots, 30 strawberries, 80 wastewaters and 74 manures were collected from 4 market garden sites in and around Ouagadougou, and processed for HAV detection. RT-nested PCR was performed with specific primers to detect RNA of HAV. From all the samples, a HAV detection rate was 20.8% (60/288) [CI95, 16.1 - 25.5%]. Indeed, 7/30 (23.33%) of lettuces, 12/42 (28.57%) of tomatoes, 4/32 (12.5%) of carrots, 10/30 (33.3%) of strawberries, 20/80 (25%) of irrigation water (wastewater) and 7/74 (9.5%) of manures were positive for HAV RNA detection.

Conclusions and application of findings: These results testify to the existence of HAV in the environment, which can come from irrigation water and/or untreated manure, from farmers and/or people infected with viruses, and thus contaminate fruit and vegetables during production. Results also indicate that contaminated fresh vegetables, when consumed raw, are potential passive vectors for the transmission of food-borne viral diseases. These results underline the need for scrupulous compliance with good agricultural and hygienic practices on

farms (composting, aeration or anaerobic digestion of soil improvers, and the use of treated wastewater for irrigation and vegetable washing), in order to reduce the pathogen load.

Keywords: HAV, raw fruit and vegetables, wastewater, manure, RT-PCR