Noroviruses (NoV) are major causes of acute nonbacterial gastroenteritis and a major public health concern [1]. Noroviruses (NoV) are members of the family Caliciviridae, they are single-stranded RNA, non enveloped viruses [2] with three major open reading frames (ORFs) that encode non structural capsid and minor structural proteins, respectively [3]. Since the first identification of this pathogen in 1972 [4], NoV have become one of the most commonly reported causative agents of large outbreaks of nonbacterial gastroenteritis worldwide [5]. NoV infection relies on the interaction of the viruses with histo-blood group antigens (HBGAs) as host receptors [6]. Based on antigenic and genetic distinctions NoV (formerly called Norwalk-like viruses) can be divided into 5 different genogroups including 29 genetic clusters (subtypes): 8 in genogroup I (GI), 17 in GII, 2 in GIII and 1 each in GIV and GV [7]. Moreover, worldwide, the GII-4 genotype (Bristol virus like genotype) has been shown to be the predominant strain of NoV associated with gastroenteritis [8,9].

Human associated NoV outbreaks resulting from ingestion of contaminated food, such as raw oysters [10] and water [11] or by person to person transmission in semi closed communities such as hospitals, schools, nursing homes and cruise ships [12]. NoV usually cause acute self-limited infections in human of all ages. However NoV infection can be severe in elderly persons, young children and immunocompromised persons. After an incubation period of 1 to 3 days, the clinical manifestations are characterized by diarrhea that lasts 12 to 60 hours accompanied by other symptoms such as nausea, vomiting, abdominal cramps, headache and low-grade fever [13].

Direct and immune electron microscopy (EM) were used to detect the presence of NoV in faecal specimens, but EM is not routinely implemented in the laboratory because of technical limitations, dependency on trained medical staff for its operation [2] and low sensitivity as it requires at least 10⁶ viral particles per ml of stool [14]. Norovirus can infect and replicate in a physiologically relevant 3-dimensional, organoid model of human small intestine epithelium [15]. Enzyme linked immunosorbent assay could be used for the screening of stool samples for NoV because of its simplicity [16]. Recently real-time reverse transcription-PCR was used for detection of GI and GII NoV from stool samples using Taq Man probes [17,18] or SYBR Green [19]. A sensitive colorimetric reverse transcription loop-mediated isothermal amplification (RT-LAMP) method was established to detect norovirus genotype GI. The method employed a set of six specially designed primers that recognized eight distinct sequences of RNA-dependent RNA polymerase and capsid protein gene [20].


