Summary

The current study wasconducted to determine the role of *Blastocystis hominis* in the pathogenicity of irritable bowel syndrome (IBS) with theirs coexistence and the most common agents of gastroenteritis especially *Escherichiacoli* and *Candida albicans* by using the gene expression of their virulence genes data via quantitative Real-time PCR.

The present study was conducted on 127 patients (62 males and 65 females) attended to Al-Hussein Teaching Hospital in Al-Muthanna Province from 18 November, 2014 to 23 May, 2015. The patients were diagnosed clinically by physician, who suffered from IBS; Patients were interviewed directly by using questionnaire form which included age, gender, type of water and residence area. In addition to that, a control group of 40 apparently healthy individuals (18 males and 22 females) whom without any history of disease were included.

B.hominis and related enteropathogenes (*E.* coli and *C. albicans*) were isolated and identified by using microscopically, culture and molecular techniques. The virulence genes of Cysteine protease (*CP* gene) of *B. hominis*, phospholipase C (*PLC* gene) of *C. albicans* and *AggR* gene of *E. coli*were detected by Polymerase Chain Reaction (RCR),then the relative gene expressions of these virulence genes were tested by using Real-Time PCR technique.

Results of present study revealed that the *B. hominis* was significantly predominant ($P<0.001$) parasite associated with IBS which constituted(33.86%) in comparison with *Giardia lamblia* (9.45%); *Entamoeba histolytica* (8.66%) and egg of helminthes (2.36%). On the other hands, the percent of isolation of related enteropathogenes were 40.16% for *C.albicans* and 37.01% for *E.coli*. The statistical analysis

showed no significant differences (P>0.05) between infected and control group.

The demographic analysis of some host factors such as age and gender in relationship with the IBS infection showed no significant differences (P>0.05) in respect to age and gender between infected and control groups. While there was a highly significance (P<0.01) between water supply and residency with IBS among patients and control groups.

Based on analysis of PCR products resultant from amplification of extracted DNA with specific primers of virulence genes showed the presence of cysteine protease (*CP*) gene with amplification size (265bp); phospholipase C(*PLC*) with (459bp) and *aggR* gene (563bp) in *B.hominis*, *C.albicans* and *E.coli*; respectively.

The current study showed a relative gene expression of tested virulence genes showed a high fold change (mRNA transcript level) in *B.hominis* (380.40)for *CP* gene in compared with *PLC* gene (161.7) in *C.albicans* and *aggR* gene (2.06) in *E.coli*.

The current present study concluded that parasite, *B.hominis* which is considered as normal flora in human intestine may play a vital role in the pathogenicity of IBS under some stress or conditions, so, it recommended to give an attention to this parasite during the routine work of stool examination.