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CYTOTOXIC AND ANTIMICROBIAL ACTIVITIES OF MIXED NATURAL PRODUCT (*TRIGONELLA FOENUM GRAECUM, COCOS NUCIFERA AND ALOE BARBADENIS*) ETHYL ACETATE EXTRACT AGAINST URINARY TRACT INFECTION CAUSING BACTERIA AND HUMAN COLORECTAL CANCER CELL LINES

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ABSTRACT

Trigonella Foenum Graecum (*TFG*) is a family member of *Fabaceae* group. Chemical compounds from this plant were known to exhibit antimicrobial and cytotoxic activities. The present study investigated the cytotoxic and antimicrobial effect induced by ethyl acetate extract of TFG supplemented with coconut water (CW) and Aloe Vera (AV) against colorectal cancer (CRC) cells (HCT116) and against *Escherichia coli, P. aeruginosa, S. aureus* and *S. typhi* and *B. subtilis*. The antimicrobial activity was accessed after 48 hours of incubation by using disk diffusion method. Meanwhile the anticancer effect of this extract was accessed using sulforhodamine assay after treatment and cultured for 72 hours. For comparison purpose, ground TFG extracts and positive controls (antibotics for antimicrobial study and 5-FU for cytotoxic assay). For antimicrobial activity, ethyl acetate extract of TFG+CW+AV exhibited antimicrobial effect only against 2 Gram positive and 1 Gram negative bacteria. Meanwhile 2 Gram negative bacteria, *S. typhi and E. coli* show no sensitivity. In SRB assay of this extract inhibited HCT116 inn a dose dependent manner. This extract shows better antimicrobial and cytotoxic activity than ground TFG and the positive control have better action for both antimicrobial and cytotoxic activity among all the extracts. However, ethyl acetate TFG+CW+AV extract shown a better action against human colon cancer Further studies using different solvents should be explored to harness the full antimicrobial and anticancer potential of TFG+CW+AV.

INTRODUCTION

1.1 Background of study

Trigonella foenum-graecum (*TFG*) or Fenugreek is commonly used in Africa Asia, and Mediterranean countries for its edible values (Anju, & Sreeja, 2010). It is also used among Ayurvedic practitioners. Fenugreek seed (FS) can be used for a variety of purposes. Whilst its extract from acts as flavouring agent in simulated maple syrup, its leaves are used in food intake (Basu & Srichamroen, 2010). FS acts as food preservatives in food products (Sindhu et al., 2012) and it is well known for its good quality protein source (El Nasri & El Tinay, 2007). In India, the ripe seeds are commonly applied in cosmetics (Sindhu et al., 2012). Fresh fenugreek leaves are good for the digestive system (Rashmi et al., 2011). Fenugreek is used traditionally as demulcent, laxative and as lactation stimulant (Dash et al., 2011). Infusion of fenugreek has been utilized to treat sore throat (Rashmi et al., 2011) It has also shown hypocholesterolemia effect in rats and dogs (Shaban et al., 2009). Xue et al. (2007) reported that FS showed hypoglycaemic and hypocholesterolemic effects on type 1 and type 2 diabetes mellitus patients.

Colorectal cancer (CRC) accounts for the fourth most common cancer incident and the second most common cause of cancer deaths after lung cancer (Colon Cancer: A Review of the Epidemiology). In 2012, almost 694,000 CRC deaths were recorded globally (WHO, Cancer). Based on the American Cancer Society (2014), almost 136,830 people were diagnosed with CRC in 2014. In