drug producers, given that over 10,000 bioactive metabolites have been recovered from these filamentous bacteria. *Streptomyces* species living in the dynamic mangrove forest are placed under constant pressure to thrive in such harsh environment, which is suggested to promote the production of interesting bioactive metabolites with anticancer properties. This project aims to investigate the cytotoxic and antioxidant activities of an extract derived from novel *Streptomyces* species isolated from mangrove forest in Malaysia.

**Methods** Four novel *Streptomyces* species (designated as MUSC 26<sup>T</sup>, MUSC 136<sup>T</sup>, MUSC 149<sup>T</sup> and MUSC 164<sup>T</sup>) were identified from the poorly explored mangrove sediment (East Coast, Peninsular Malaysia) using polyphasic approach. As an attempt to explore the bioactive potential of these mangrove-derived streptomycetes, extracts of these strains were prepared via fermentation and chemical extractions before performing in vitro biochemical and screening assays using cancer cell lines.

**Results** All of the methanolic extracts of these strains were shown to possess significant antioxidant activities. Among these strains, strain MUSC 136<sup>T</sup> displayed highest cytotoxic activity against colon cancer cell line HCT-116, killing more than half of them at 400 μg/mL. In order to understand the mechanisms of actions involved, the levels of intracellular glutathione (GSH) were evaluated as this ubiquitous non-protein thiol is crucial for cell survival. A drastic increase in the proportion of cells undergoing GSH depletion was observed (44.11%±6.21%) as compared to control. Along with this observation, higher expression level of tumour suppressor HSF2 was detected by Elisa. The correlation between faecal HSF2 and MES was compared by Pearson correlation with MES (r=0.81). The level of faecal HSF2 was a positive correlation with MES (r=0.81). The concentration of faecal HSF2 was increasing in the group of UC patients with MES=0,1,2,3 compared with the normal control group. The sensitivity, specificity, positive and negative predictive value of faecal HSF2 to predict mucosal healing was (67.8%, 80.9%, 67.1% and 81.5%) respectively. The predictive value of specificity and the negative predictive value was better than sensitivity and positive predictive value. The AUC of faecal HSF2 to predict mucosal healing was 0.919 (95% CI:0.846–0.992, p<0.0001). The AUC was greater than 0.9 that indicated the faecal HSF2 had a high accuracy to predict mucosal healing of UC.

**Conclusions** Faecal HSF2 concentration may be used as a high accuracy noninvasive evaluation index for predicting the mucosal healing of UC.