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# Cytotoxicity of fenugreek sprout extract and their bioactive constituents in MCF-7 breast cancer cells

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Trigonella foenum-graecum L. (fenugreek), a member of the legume family (Fabaceae[(1)], is a promising source of bioactive phytochemicals, which explains its traditional use for a variety of metabolic disorders, including cancer[(2)]. The current study aimed to evaluate fenugreek sprouts methanolic extract [FSME] to their cytotoxic and antiproliferative activities in MCF-7 as a breast cancer cells model.

Organic fenugreek was extracted via Soxhlet. The extracts were chemically characterised using high- resolution accurate-mass liquid chromatography-mass spectrometry. The viability of MCF-7 cells was assessed using the colourimetric cytosolic assay 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide [MTT]. Cell proliferation was done by BrdU cellular DNA colourimetric assay, and mitochondrial DNA was determined by qPCR analysis.

Flavone C-glycosides compounds detected include those derived from apigenin and luteolin, in addition to isoflavones. Five different flavones or their glycosides (apigenin, vicenin-2, vitexin, luteolin and orientin) and two isoflavones (daidzein and formononetin) were quantified in the fenugreek extracts. FSME showed dose and time-dependent effects on MCF-7 cell viability. The $IC_{50}$ value (526 µg/mL) of FSME decreased the proliferation of MCF-7 cells significantly by 42.29 ± 4.29%, 65.78 ± 3.24%, 71.73 ± 8.03% after 24, 48, and 72 h, respectively ($P < 0.001$). Furthermore, FSME increased mitochondrial DNA damage (1.963 ± 0.002 fold; $P \leq 0.0001$).

This study reveals the potential anti-cancer effects of FSME and suggests that fenugreek sprouts are a powerful and untapped resource for bioactive compounds.

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## References

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