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COMMENTARY

Anti-cancer properties of *Murraya koenigii* Spreng

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Introduction

Cancer is certainly one of the most dreaded disease in humans.[1] Already billions of dollars has been invested into cancer research. These researches had led to several promising drugs which are currently being used in cancer treatments.[2] However, still to many patients a cure for their cancerous cells had been elusive mainly due to drug resistance. On the other side, for those who were luckier in which drugs were effective, it was found to be accompanied with unpleasant side effects.[3] Therefore, it is important to continue explore novel targets that could slow and arrest the growth of cancerous cells while having minimal side effects to the body. Phytomedicine has been in practice since the ancient days. Many modern anti-cancer drugs are analogues of natural compounds.[4] More recently, researchers have been trying out combination or adjunct therapies where promising phytomedicines were used along with standard medications.[5] Although, in some cases it was found to be minimally effective, it is still believed that the right combination of drug and the natural component could improve the overall effectiveness of the treatment. It is believed that phytomedicines which are rich in antioxidant molecules might be helping to protect normal cells from the harmful effects of anti-cancer drugs.[6] Accordingly, research in this direction seems promising and warrants more attention.

Anti-cancer properties of Murraya koenigii

In this article[7], Bindu Noolu and Ayesha Ismail has reported the potential of *Murraya koenigii* (commonly called curry leaf plant and widely used as a seasoning ingredient in South-Indian cuisine) to arrest cell proliferation by inhibiting proteasome function in four different cancer cell lines (Caco2, HepG2, HeLa and LNCaP) representing colon, liver, cervical and prostate cancers. It is important to test on various cell lines as IC_{50} varies greatly with types of cancer. Few studies have earlier reported on the anti-cancer effects of Morraya Koenigii[8, 9], but this is the first study that did a dose response on more than one cancer cell types. Further, dose dependent inhibition of 26S proteasome activity was also reported. The IC_{50} values were 12.5 µg/mL for Caco-2, 7.99µg/mL for HeLa cells 43.4µg/mL for HepG2 cells and 12.4 µg/mL for LNCaP cells. The proteasome complex has been considered an important target for anti-cancer drugs. Inhibition of 26S proteasome complex induces apoptosis and helps in slowing down cancer progression.[10]

This study confirms the anti-cancer properties of *Murraya koenigii* leaves extracts and demonstrates that the anti-cancer effects might be mediated through inhibition of 26S proteasome complex. The current data shows promise and further research should concentrate on improving effectiveness of the extract against cancer cells. Dose response data from this study will be helpful in designing future projects to elucidate the exact mechanisms underlying the observed anti-cancer, proteasome inhibiting properties. Understanding the mechanism of action will help in determining the possibilities of combination therapies either with molecules acting through a similar mechanism or with other anti-cancer drugs for synergistic effects. A number of alkaloids and flavonoids have been identified as the major bioactive components of *Murraya koenigii*.[11] Therefore, future research should also identify the bioactives responsible for the anti-cancer properties of *Murraya koenigii* leaves. Although finding a cure for cancer has been challenging, newer therapeutic techniques offer hope to the future of cancer treatment.

Conflict of Interest

None

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