

Dietary Evaluation, Antioxidant and Cytotoxic Activity of Crude Extract from Chia Seeds (*Salvia hispanica* L.) against Human Prostate Cancer Cell Line (PC-3)

Dugganaboyana Guru kumar¹, Palanisamy Chella Perumal³, Kiran Kumar⁴, Sridhar Muthusami², Velliyur Kanniappan Gopalakrishnan^{2,3*}

¹Postgraduate Department of Biochemistry, JSS College of Arts, Commerce and Science, Mysore, Karnataka, India.

²Cancer Biology and Medicinal Chemistry Unit, Department of Biochemistry, Karpagam University, Coimbatore, Tamil Nadu, India.

³Department of Bioinformatics, Karpagam University, Coimbatore, Tamil Nadu, India

⁴Genetics Research Laboratory, Department of Zoology, Yuvaraja's College, Mysore, Karnataka, India.

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ABSTRACT

Natural products have continually played an important role in drug discovery because it serves as active principles in drugs as well as templates for synthesis of new drugs. Present study is attempted to evaluate the dietary evaluation, antioxidant property and cytotoxicity (human prostate cancer cells) of crude extract of Chia seeds. Results, phytochemical screening and dietary evaluation revealed the presence of tanins, saponins, flavonoids, alkaloids, proteins, cardio glycosides, phenols and important minerals were present in the crude extract of Chia seeds. The total estimation of secondary metabolites of chia seed were found to be in moderate level. The cytotoxicity assay exposed that, crude extract of chia seeds inhibited the growth of prostate cancer cell lines (PC-3) in a dose dependent manner. In conclusion, the crude extract of Chia seeds can be used as a therapeutic option in prostate cancer cells. However, further studies are warranted to substantiate the current findings.

Keywords: Chia seeds; Dietary evaluation; Antioxidant activity; Cytotoxicity.

INTRODUCTION

Cancer greatly contributes to human mortality and is considered as a major threat to humankind and morbidity globally¹. The incidence of cancer is a growing health problem around the world particularly the prostate cancer is one of the leading causes of cancer related deaths in men worldwide². Prostate cancer (PCa) is recognized as one of the principal health care problems facing the male population worldwide. The world wide prostate cancer burden is expected to grow to 1.7 million new cases and 499 000 new deaths by 2030³. According to the 2015 statistics of the American Cancer Society estimates the current prostate cancer incidence in about 220, 800 new cases for prostate cancer and 27, 540 deaths from prostate cancer. Cancer is a major health threat in India. In India, prostate cancer ranks fifth in its incidence and fourth in mortality rate⁴. Plants have many phytochemicals with various bioactivities including antioxidant, anti inflammatory and anticancer activities⁵. Extracts of medicinal herbs such as sterols, phenolic compounds, flavonoids and tannins have positive effects against cancer, compared with chemotherapy or hormonal treatment. Natural antioxidants protect the human body against free radicals, inhibit many chronic diseases⁶. *Salvia hispanica* L., also known as chia, is an herbaceous

plant, and it belongs to the family Lamiaceae. Chia is native to the region that stretches from North Mexico to Guatemala and now it is also cultivated in Southern parts of India (Mysore District, Karnataka). Its seeds were widely used by Aztec tribes for food, medicine and paints⁷. Chia seed oil contains the highest natural percentage of omega-3 fatty acids, which are essential in the human diet. Omega-3 fatty acids help to make up the phospholipids that are fundamental components of cell membranes⁸. Unsaturated Omega-3 fatty acids are nutritionally important for good health and are beneficial for individuals suffering from heart disease, diabetes and immune response disorders. Chia seeds are good source of dietary fiber, protein and antioxidants⁹. The consumption of dietary fiber improves fecal bolus formation and proper evacuation of stool, which helps prevent obesity and colon cancer. Chia seeds are losses source of antioxidants such as polyphenols which protects cardiovascular diseases and cancers¹⁰. Therefore the present study is aimed to evaluate the the dietary evaluation, antioxidant property and cytotoxic activity of crude extract from Chia seeds in human prostate cancer cells.

MATERIALS AND METHODS

*Author for Correspondence: vk.gopalakrishnan@karpagam.ac.in