

Complex Synthesis of Cis-[Pt(Asc) (NH₃)₂] and its Effect on Human Breast Cancer MCF-7 Cell *in vitro*

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Abstract: Bosom malignancy is the most regularly analyzed disease and the imperative reason for growth-related passing among ladies, accounting for 23% of all new tumor cases and 14% of tumor passing's. L-Ascorbic acid, commonly known as vitamin C is well-known in chemistry since long back. It has tremendous medical applications in several diseases. Therefore, in this paper five concentrations of complex cis-[Pt(Asc)(NH₃)₂] where Asc=L-ascorbic acid derivative on MCF-7 cell line to detect the changes in five cellular parameters (nuclear intensity, mitochondrial membrane potential, valid cell count, cytochrome C, and membrane permeability) after exposure with 24 h are investigated. The results showed that 400 µg/mL has the highest significant effect on the five parameters (nuclear intensity, mitochondrial membrane potential, valid cell count, cytochrome C, and membrane permeability) when compared with Doxorubicin 20 µM (substance used as anti-cancer) which represent the positive control. Also, the 200 µg/mL showed results close to those of the untreated cells which represent the negative control (-ve) with a very few significant differences.

Keywords: breast cancer; vitamin C; cis-platinum; high-content screening

■ INTRODUCTION

The bosom disease is the most generally analyzed malignancy and the imperative reason for tumor-related demise among ladies, accounting for 23% of all new growth cases and 14% of growth passing's. Bone is a standout amongst the most extraordinary target destinations of metastasis for bosom malignancy, and up to 70% of ladies with cutting-edge infection create bone metastases [1]. Such sores have irritating impacts, including torment, spinal pressure, pathologic cracks, and hypercalcemia, all of which enormously trade off the personal satisfaction and result [2]. Platinum-based medications, for example, oxaliplatin, cisplatin and carboplatin, are utilized as a part of the treatment of a significant number of the more forceful and difficult to treat tumors, including those of the lung (non-little and

little cell diseases), inside, bosom, throat, cervix testicles and ovaries, and in addition non-Hodgkin's lymphoma [3]. Carboplatin is the minimum dangerous of the platinum-based medications, yet like all coordinators of DNA harm, its viability diminishes on a patient-by-quiet premise over numerous chemotherapy cycles because of the rise of protection. In this foundation, understanding the atomic premise of medication protection could prompt the clinical capacity to beat gained protection in tumors utilizing a resensitizing particle, bringing about an enhanced treatment outcome [4].

Since the disclosure of the antitumor action of cis-plating by Rosenberg et al. [5], more than 2000 cis-Platin Analogues have been arranged'. Hollis et al. [6] combined the Vitamin C. analogs, the cis-[Pt(diamine)(A)] and cis-[Pt(RNH₂)₂(HA)₂] where