## Awareness of Vinca alkaloids among dental students

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**ABSTRACT**

Vincristine along with vinblastine are dual indole-based conjugated Vinca alkaloids formed from the foliage of the herb Catharanthus roseus, traditionally known as Vinca rosea vincristine, that have been effectively prescribed as a single treatment and also in conjunction with other medications in hematological and stable malignancies chemotherapy for tumors. The purpose of this survey was to assess awareness of medical use of vinca alkaloids among dental undergraduate students. A cross-section study was performed with a self-directed survey questionnaire containing 10 queries distributed among 100 dental students. The responses were recorded and analysed. 94% of the respondents were not aware of medical uses of vinca alkaloids. 95% were not aware of anticancer activity of vinca alkaloids. 97% were not aware of the mechanisms of action of vinca alkaloids. Again 97% were not aware of side effects of the vinca alkaloids. This study concluded the awareness about the medical use of vinca alkaloids among dental students was poor. Majority of them are not aware of the anticancer activity of vinca alkaloids.

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### INTRODUCTION

Vincristine along with vinblastine are dual indole-based conjugated Vinca alkaloids formed from the foliage of the herb Catharanthus roseus, traditionally known as Vinca rosea vincristine, that have been effectively prescribed as a single treatment and also in conjunction with other medications in hematogenic and stable malignancies chemotherapy for tumors. They restrain Microtubulin (MT) by preventing the functionalization of tubulin. In the process of cell proliferation, they serve as antagonists mostly during metaphase of the cellular phase and therefore, by allowing microtubules to impede the progress of the mitotic spindle. In cancerous cells, these medicines interfere with the DNA fixing and RNA-combination of DNA-subordinated RNA polymerase[1-4] (Einhorn, 1977; Gigant et al., 2005; Rao et al., 1985; Williams et al., 1987).

VLB is efficacious in the management of multiple malignancies like Hodgkin's disease, and VCR has been shown to be sufficient for acute lymphoblastic leukemia. Vinca alkaloids may induce leukopenia and neurotoxicity. Oncolytic migration of these heterodimers alkaloids has been associated with the mitotic shaft hurting through mitotic capture. Such alkaloids also alter the speed of axoplasmic transportation by making an alteration in neurotubules. Cytotoxicity and fringe neuropathy can be a consequence of the critical mechanism of action of such alkaloids by virtue of tubulin.

Microtubules (MTs) play the main role during the time spent with the mitosis, after which chromo-
somes of the cell are replicated and segregated to frame two identical subsets, allowing cellular division into two daughter cells. MTs are linked with support for cell form, cell motility, intracellular vessel and numerous additional cell ability. The MTs are made from tubulin, β heterodimers. Such structures undergo extraordinarily strong polymerization and depolymerization as a result of the transient expansion of the tubulin dimers at their extreme. Vinca alkaloids act by impedance with this dynamic balance, by either hindering tubulin polymerization and blocking MT dismantling, forestalls appropriate MT work and at last prompts cell death (Owellen et al., 1972; Wilson et al., 1970). Oral disease is one of the most harmful tumours and it can require chemotherapy. Thus it is basic the dental specialists and dental understudies know about the different chemotherapeutic agents, vinca alkaloids being one of them, utilized in the treatment of malignancy. The purpose of this survey was to assess awareness of medical use of vinca alkaloids among dental undergraduate students.

MATERIALS AND METHODS

A cross-section study was performed with a self-directed survey questionnaire containing 10 queries distributed among 100 dental students. The questionnaire assessed the awareness about vinca alkaloids, their medicinal uses, anticancer activity, mechanism of action and side effects. The responses were recorded and analysed.

RESULTS AND DISCUSSION

94% of the respondents were not aware of medical uses of vinca alkaloids (Figure 1). 95% were not

Figure 1: Awareness of medical uses of vinca alkaloids

Figure 2: Awareness of anticancer activity of vinca alkaloids

Figure 3: Awareness of mechanism of action of vinca alkaloids

Figure 4: Awareness of side effects of vinca alkaloids
of Vinca alkaloids was evaluated using these novel subordinates and some significant new results were identified for the tubulin polymerization framework. The structure of these dimers is a continuous source of further discovery in this discipline of medicine and therapy (Keglevich et al., 2012; Marantz et al., 1969; Venghateri et al., 2013).

This study inferred the dental student’s knowledge about vinca alkaloids is poor. They are not aware of the antitumour effectiveness of vinca alkaloids and they are unaware of the side effects of these compounds also. These modifications can further enhance the anticancer activity of these compounds. The researchers can further advance the development of newer vinca derivatives in the management of cancer.

CONCLUSIONS

This study concluded the awareness about the medical use of vinca alkaloids among dental students was poor. Majority of them are not aware of the anticancer activity of vinca alkaloids. Further rigorous continuing education programs and awareness-raising workshops are therefore required to enhance the knowledge and understanding of vinca alkaloids amongst dental students.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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