Valproic acid: Growth inhibition of head and neck cancer by induction of terminal differentiation and senescence

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Available at: https://works.bepress.com/rosnah_zain/11/
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Abstract

Background: There are limited studies on the effects of drugs that modulate epigenetic regulation for head and neck squamous cell carcinoma (HNSCC). This study determined the effect of valproic acid (VPA) on HNSCC. Methods: Growth inhibition effects of VPA alone or in combination with 5-aza-2’deoxycytidine (5-aza-dC) or all-trans retinoic acid (ATRA) was evaluated with MTT and clonogenic assays on 5 HNSCC cell lines. The mechanism of growth inhibition was investigated by looking at markers of terminal differentiation and senescence. Results: Growth inhibition profiles of HNSCC cell lines varied in response to VPA. Inhibition of clonogenic survival in response to VPA was associated with an upregulation of p21, expression of terminal differentiation markers, and cellular senescence. Notably, a combination treatment of 5-Aza-dC-VPA-ATRA enhanced growth inhibition in cells resistant to VPA. Conclusion: VPA is a potent inhibitor of proliferation in some HNSCC cell lines, and may be used to treat.

Keyword

Head and neck cancer; Histone deacetylase inhibitor; Senescence; Terminal differentiation; Valproic acid, Oral squamous cell carcinoma, OSCC, lichenoid lesions, lichen planus, oral cancer, oral tumours, pemphigus, traumatic eosinophilic granuloma, aphthous ulcers, oral mucosal lesions, betel chewers mucosa, betel quid related lesions, betel quid, areca quid, tobacco quid, oral cancer screening, training and calibration, early detection, oral cancer awareness, biobanking, tissue bank, databank, oral cancer tissue bank, research credibility, research ethics.

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Source

Head and Neck

ISSN

1043-3074

DOI

10.1002/hed.21734

Page

-

Volume

-

Year

-
Please Cite As


URL

- [http://www.scopus.com/inward/record.url?eid=2-s2.0-79953266064&partnerID=40&md5=77a9404f4e78b7f75a649895c90b5729](http://www.scopus.com/inward/record.url?eid=2-s2.0-79953266064&partnerID=40&md5=77a9404f4e78b7f75a649895c90b5729)