Investigating the effects of feselol in comparison with verapamil on vincristine cytotoxicity

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Bladder cancer is the most common urologic cancer. Studies have shown that more than 90% of bladder cancers are transitional cell carcinoma (TCC). It has also demonstrated that these cells are resistant to vincristine (VCR) (by P-glycoprotein (P-gp) mediated drug resistance. It has been shown that verapamil increases anticancer drugs accumulation in multidrug-resistant (MDR) cell lines probably by interaction with P-gp. In present study, the effects of feselol, a sesquiterpene coumarin isolated from the fruits of Ferula badrakema were investigated on VCR cytotoxicity in comparison with verapamil.
To do so, 5637 cells, a subline of TCC cells, were treated with different combinational concentrations of feselol+VCR and verapamil+VCR. The morphological changes were then evaluated by invert microscopy and cell viability was analysed by MTT assay during 72 hours. The results demonstrated that 16 µg/ml feselol (a non-toxic compound) could increase the cytotoxicity of 40 µg/ml VCR by 28.32 % probably through P-gp inhibition. Also, 64 µg/ml of verapamil increased the cytotoxicity of 30 µg/ml VCR by 45.61 %. Thus, verapamil showed higher cytotoxic effects than feselol, when used in combination with VCR. Nevertheless, feselol, a non-toxic natural compound, might be considered as a good candidate to reverse MDR (in clinical trials).

Keywords: Feselol, Verapamil, Vincristine, 5637 cells.