Determination of Sodium Fluoride in Dental Mouth Wash and Oral Multivitamin Formula Using RP-HPLC Precolumn Derivatization Reaction

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***Abstract*-An accurate, selective and sensitive reversed phase-HPLC method has been developed and validated for selective determination of sodium fluoride in dental mouth wash and oral multivitamin formula. The method was based on a precolumn derivatization reaction of sodium fluoride with triphenyl silyl hydroxide in acidic conditions then the product (triphenyl silyl fluoride) was extracted into n-heptane. Limit of quantification and limit of detection for sodium fluoride were found to be 1.07 and 0.35 µg/ml; respectively. A Zorbax® eclipse HC-C18 column (250 mm x 4.6 mm x 5 µm) was used for separation with acetonitrile: water (75:25, v/v) as the mobile phase (flow rate 0.5 ml/min), temperature was adjusted at 40˚C with detection wavelength of 222nm. The retention time was found to be about 8.6 min. The method exhibited a wide linear range of response from 1-300µg/ml with a correlation coefficient of 0.9998 and percentage recovery of 99.50 ± 0.792. Recoveries in dosage forms were found to be 99.33± 0.818 and 98.76 ± 0.930 for dental mouth wash and oral multivitamin formula; respectively. The developed analytical method has been validated for selectivity, linearity, precision, accuracy, and robustness according to ICH guidelines. The developed method could be successfully employed for routine analysis of fluoride ion in pharmaceutical formulations as well as in a wide range of matrices due to high selectivity of the method.**

***Keywords*: fluoride, precolumn, derivatization, selective, RP-HPLC**