

## Measurement of Free Iodine in Povidone-Iodine Solutions and Evaluation of Antibacterial Properties

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### Abstract

**Introduction:** Povidone-Iodine was introduced to the pharmaceutical market as an antiseptic agent in the 1950's. In this study, we presented a measurement method for "Free" Iodine in Povidone-Iodine solutions and its effect on disinfection of these solutions was investigated.

**Methods and Results:** In this study, Povidone-Iodine solutions were prepared with different concentration of free iodine but with the same available iodine, then free iodine in these solutions was measured by heptane extraction method. pH, available Iodine and Iodide was measured according to BP2017 pharmacopeia. The antibacterial activity of these specimens was investigated after 15, 30, 60, 120 seconds on two microorganisms including pseudomonas aeruginosa and staphylococcus aureus.

All specimens were acceptable according to pharmacopeia acceptance criteria and because the amount of molecular iodine (so-called free iodine) determines the level of antibacterial activity in Povidone-Iodine, the reduction in free iodine until a specified concentration in this study, did not decrease on acceptable antibacterial activity.

**Conclusions:** Because high free iodine is the main factor for skin irritations, reducing free iodine in Povidone-Iodine disinfectants until a specific concentration, in addition to preserve antibacterial properties, reduces skin irritation considerably.

**Key words:** Povidone-Iodine, Free Iodine, Antibacterial.