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Povidone Iodine use in Periodontics

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Abstract

Povidone iodine is an iodophore in which iodine is linked to povidone (poly vinyl pyrrolidone, PVP-I). The povidone molecule, by virtue of its affinity for cell membranes delivers diatomic free iodine directly to the bacterial cell surface where it exerts its antibacterial effects .It is a broard spectrum antimicrobial and is effective against most bacteria including putative periodontal pathogens. The effects of povidone iodine on oral bacteria appears to be derived from the short 'time kill' and high 'percentage kill' properties of this preparation. Povidone-iodine kills periodontopathic bacteria in vitro within 15–30 s, and exhibits a wide virucidal spectrum, covering both nonenveloped and envelopedviruses, in vitro studies

have alsoshown inhibition of corona virus (SARS CoV-2) and reducing the viral load.

Keywords

Povidone iodine, Poly vinyl pyrrolidone, PVP-I, Periodontal pathogens, Virucidal, Corona virus (SARS CoV-2)

Introduction

Povidone iodine or polyvinyl pyrrolidone-iodine, commonly abbreviated as PVP-I was discovered by American scientists H. A. Shelanski and M. V. Shelanski. PVP-I was introduced to the pharmaceutical market as an antiseptic agent in the 1950's and is found to be more effective than other iodine formulations and was less toxic.Bernard Courtois, a chemist in 1811 discovered the natural element iodine and in 1880, Devaine described its bactericidal efficacy.[1] However, iodine's clinical application was limited, because the antiseptic stained and irritated mammalian tissues. Subsequently, it was determined that binding iodine to macromolecules helped detoxify this effective microbicide, thereby making it user friendly.[1]

PVP-I is an iodophor, a compound that consists of iodine plus a solubilizing agent (i.e., polyvinylpyrrolidone [povidone]). Combining iodine with polyvinylpyrrolidone increases its ability to dissolve in water and alcohol, reduces irritability, and decreases staining caused by pure iodine.[2] The PVP-I complex facilitates slow release of iodine in solution or when it is painted onto soft tissues and allowed to dry. In solution, bound and available iodine are in equilibrium and bound iodine is released from the PVP-I complex as the available iodine is used.[1]The povidone molecule, by virtue of its affinity for cell membranes delivers diatomic free iodine directly to the bacterial cell surface where it exerts its antibacterial effects.It is a broard spectrum antimicrobial and is effective against most bacteria including putative periodontal pathogens.

Chemical Structure

PVP-I is 2-Pyrrolidinone, 1-ethenyl-, photopolymer, compound with iodine[3]

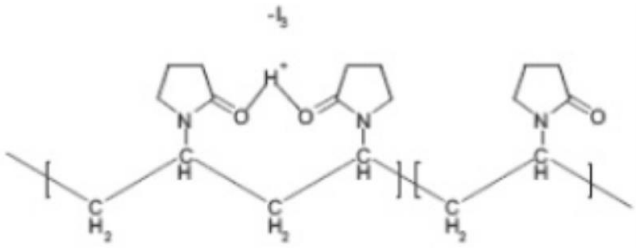

Fig. 1. Polyvinylpyrrolidone [povidone iodine]

Mode of Action

In the PVP-I complex, the iodine does not exist as a single species, and infact several forms of iodine have been characterized:

- **Available iodine**: Contains all the iodine species which can be titrated with sodium thiosulfate
- **Iodide:** Negatively charged ion; necessary for the complexation of iodine
- **Total iodine:** Given by the sum of available iodine and iodide.
- **Free Iodine**: The type of iodine which can be extracted from aqueous PVP-Iodine solution.

The disinfecting characteristics of iodine arise from its ability to substitute for covalently bound hydrogens in compounds containing -OH, -NH, -SH, or CH functional groups. PVP-I being a polymeric iodophor, reacts with oxygen containing functional groups. The difference between a conventional iodine solution and an iodophor is that the latter carries practically all the iodine in a complexed form, so that the concentration of the free iodine in the solution is always very low. This property has the effect of reducing the drawbacks associated with the presence of elemental iodine i.e. high toxicity, high level of irritation and staining power. [4]

Spectrum And Mechanism Of Microbial Destruction

PVP-I is microbicidal for Gram-positive and Gram-negative bacteria, fungi, mycobacteria, viruses, and protozoans.[5] Its bacterial activity is due to oxidation of amino (NH−), thiol (SH−), and phenolic hydroxyl (OH−) groups in amino acids and nucleotides. PVP-I also reacts strongly with double bonds of unsaturated fatty acids in cell walls and organelle membranes.[5]

Schreier et al.[5] reported that electron microscopic and biochemical assessments supported the contention that PVP-I interacted with cell walls, causing a transient or permanent pore formation. This resulted in loss of cytoplasmic material and deactivation of enzymes due to direct contact with iodine.[6]PVP-I also was found to cause coagulation of nuclear material without rupturing cell walls.

In Vitro Bactericidal Concentration of Pvp-I

Gocke DJ et al,[7] in their in-vitro study indicated that all tested strains of Gram – positive and Gram - negative bacteria (12 different organisms, 230 isolates) were susceptible to PVP-I applied for 120 seconds. Paradoxically, an increased bactericidal effect was noted with lower concentrations of PVP-I (maximum killing occurred at 0.1% to 1.0% and not at 10% PVP-I). This finding also has been reported by others;[8] however, it is not clear why this occurred. One hypothesis suggested that diluted PVP-I weakened the iodine linkage to the PVP complex which resulted in an increase of free iodine.[6]

Maruniak et al.[9] determined the lowest dilution (minimal bactericidal concentration) of several antimicrobial agents which still provided a bactericidal concentration for putative periodontal pathogens. **Caufield et al.**[10]reported that iodine had a lower MBC (minimum bactericidal concentration, 5 minutes) than chlorhexidine, sodium fluoride, and stannous fluoride . It was concluded that PVP-I was more potent than hydrogen peroxide, phenolic compounds, or chlorhexidine, because a greater dilution of PVP-I killed bacteria within 5 minutes. A combination of H_2O_2 and PVP-I appeared to be even stronger than PVP-I alone for killing Porphyromonas gingivalis. However, in vitro data may not reflect in vivo results, because intraoral findings can be affected by salivary dilution, protein deactivation, and the inability of drugs to penetrate bacterial biofilms.

Comparison of Antimicrobial MBC* (%) for Biofilms[10]

Organism	Chlorhexidine	Iodine	Stannous Fluoride	Sodium Fluoride
A. Actinomycetemcomitans	2.0	0.5	4.0	>4
P. gingivalis	0.5	0.25	0.5	>4
P. intermedius	2.0	0.5	8.0	>4
F. nucleatum	0.5	0.5	4.0	>4

*Minimum bactericidal concentration (5 minutes)

The above table indicates that a 0.25% iodine concentration for 5 minutes was needed to kill P. gingivalis. To create approximately a 0.25% solution of iodine from povidone- iodine (10%), the following dilution needs to be performed: povidone-iodine (10%) should be diluted to 2.5% (available iodine is around 0.1 of the PVP-I concentration). Accordingly, PVP-I (10%) must be diluted 3 parts water to one part PVP-I. This creates 4 parts to the solution. PVP-I (10%) divided by 4 produces a 2.5% PVP-I concentration, which contains around 0.25% iodine.

Role of Povidone Iodine in Periodontics

Use of PVP-I for reduction of salivary bacteria and prevention of transient bacteremias -Tissue invasive procedures (i.e., injections, extractions) and intrasulcular procedures such as root planing often produce transient bacteremias.[11, 12] To reduce the incidence of projecting bacteria into the bloodstream, which could result in development of subacute bacterial endocarditis, subgingival irrigation or rinsing with an antiseptic before dental procedures may be beneficial.[13-15]

In this regard, **Rahn R**[13] conducted a study to determine the ideal time span and concentration of PVP-I that should be used as a preprocedural rinse. He reported that the amount of streptococci in saliva was normally log 5 to log 6 CFU/ml. The greatest decrease of streptococci was attained when PVP-I was diluted 1/1, creating a 5% concentration and applied for 30 seconds. However, the impact of undiluted PVP-I (10%) was not assessed.

When PVP-I (5%) was compared to Chlorhexidine (0.2%), the PVP-I achieved a 2 to 3 log decrease of streptococci, whereas the Chlorhexidine achieved only 1.5 log reduction. These data indicated that the amount of bacteria in saliva can be reduced almost 33% by rinsing with PVP-I (5%) for 30 seconds prior to dental procedures. Furthermore, the decrease found within 5 minutes did not rebound to baseline after 90 minutes. The author suggested, but did not verify, that pre-rinsing with PVP-I would reduce the amount of bacteria in aerosols generated after using an ultrasonic scaler or high-speed handpiece.[13]However, this recommendation is in accordance with other studies which noted that pre-procedural rinsing with antiseptics reduced bacteria in dental aerosols.[16,17]

Rahn et al.[14] also compared the efficacy of PVP-I and Chlorhexidine to prevent post-treatment bacteremias.[14] Before extracting teeth, the affected sites were subgingivally irrigated with either undiluted PVP-I (10%), Chlorhexidine (0.2%), or water. The frequencies of bacteremia detected after irrigation were as follows: PVP-I: 27.5%; water: 52.5%; Chlorhexidine: 45% (N = 40 per group). These data corroborated previous investigations which noted that pre-procedural irrigation with PVP-I (10%) significantly reduced post-extraction and postoperative bacteremias.[18,19] However, in contrast to these findings,

Witzenberger et al.[18] found that local degerming by mouth rinsing and sulcus irrigation with povidone-iodine prior to subgingival scaling did not decrease the incidence of bacteremias.[18]

Other Uses of Povidone Iodine

As Skin Disinfectant

The patient's skin is a major source of pathogens that cause infection. Traditional aqueous-based iodophors, such as povidone-iodine, are one of the few products that can be safely used on mucous membrane surfaces.[20] PVP-I as 10% solution(1% available iodine) is widely used for skin disinfection and 7.5% PVP-Iodine solution (0.75% available iodine) is used for wound cleansing. The resultant broad spectrum of antimicrobial activity is well documented

and its efficacy, particularly in relation to resistant micro-organisms such as methicillin-resistant Staphylococcus aureus, has been shown.[21]

Pre-Operative skin preparation

Procedural and surgical site infections create difficult and complex clinical scenarios. A source for pathogens is often thought to be the skin surface, making skin preparation at the time of the procedure critical. The most common skin preparation agents used today include products containing iodophors. PVP-Iodine products have been widely used for pre-operative skin preparation and in various surgical procedures and shown to significantly lower subsequent infection rates.[22] In the aqueous form, most commercially available iodophors require a 2-step application in a scrub-and-paint technique, and their activity is limited by the amount of time the agent is in contact with the skin.[23]

Topical Application

PVP-I in the form of ointments, sprays, lotions is used to prevent microbial contamination of wounds, ulcers, burns etc. PVP-Iodine effectively controls bacterial growth and protects the developing epithelium. Unlike many antibiotic agents it has the added advantage in that its continued use does not result in the generation of resistant organisms.[24]

Table -The topical application of different PVP-I preparations and their uses[25]

Application	PVP-I Preparation
Pre and post-operative antiseptic skin cleanser for major and minor surgical procedures.	Topical Solution 10% w/v Topical Alcoholic Solution 10% w/v Where quick drying effect is required
Skin cleanser for treatment of acne vulgaris, General disinfection of the skin.	Liquid Soap 4% w/v
Quick drying antiseptic for the treatment and prevention of infection. Useful against herpes simplex, herpes zoster, grazes, abrasions, cuts and wounds.	Antiseptic Paint 10% w/v
Treatment and prevention of infection in minor cuts and abrasions, minor surgical procedures and small areas of burns.	Ointment 10%w/v Dry Powder Spray 2.5% w/v
Treatment of infections in decubitus and stasis ulcers.	Ointment 10%w/v, Dry Powder Spray 2.5% w/v
Antiseptic skin cleansers for pre-operative scrubbing and washing by surgeons and theatre staff with non-ionic surfactants and preoperative preparation of patients' skin.	Surgical Scrub 7.5% w/v with non-ionic surfactants

Effects of Povidone Iodine on Wound Healing

Neidner R[26] In vitro experiment have indicated that PVP-I at levels of 250 to 500 µg/ml were cytotoxic to cultured keratinocytes and fibroblasts. However, in vitro toxicological data are not easily transferred to clinical situations. For instance, in vitro cells cultured as monolayers are without any vascular system and are not able to compensate for even a slight cytotoxic influence.[26] In contrast, in vivo multiple cell layers that are vascularized can overcome some toxic disturbances.

Niedner R, Schopf E[27] noted no negative effects due to PVP-I (10%) on epithelialization of partial-thickness wounds or granulation tissue formation after fullthickness wounds in guinea pigs. PVP-I was shown to temporarily impede blood flow in microvessels in granulation tissue,[28]but in a mouse model, neovascularization was not impaired.[29] With regards to wound healing within the oral cavity, there have been no histological studies to assess the impact of PVP-I. In general, after PVP-I (10%) use, researchers have not reported any impaired healing.

Side Effects of Povidone Iodine

1. Povidone-iodine utilization can result in several side effects. It is capable of staining teeth or the tissues. Stain on teeth can be removed with a pumice cup or application of H_2O_2.[30] Staining of the tongue disappears after use of PVP-I is discontinued.
2. PVP-I should not be used in individuals who are allergic to iodine, and its use is contraindicated in pregnant women and nursing mothers.[3] In general, short-term use of PVP-I has not been noted to cause thyroid dysfunction.[31] However, long-term use can induce thyroid dysfunction due to excessive incorporation of iodine.[31]
3. Sensitization to PVP-I is rare. Among 600 patients who underwent a routine patch test, only 0.73% showed epicutaneous sensitization.[26]

In general, no untoward systemic or tissue reactions have been reported after intraoral PVP-I use.[13,19] This antiseptic is frequently used in the treatment of many medical conditions and is considered a safe drug, if not used for prolonged periods of time (multiple applications for weeks).[1,26,31]

In this regard, **Andrews**[32] reported a series of cases where PVP-I (10%) was administered for weeks and resulted in iodine toxicity.[32] Symptoms included rhinorrhea, conjunctivitis, hypercalcemic metabolic acidosis, brachycardia, hypertension, elevated hepatic enzymes, central nervous system dysfunction, and progressive renal insufficiency. While these symptoms are uncommon, it is appropriate to monitor patient more closely when PVP-I is used for a protracted period of time on non-intact mucosal or skin surfaces.

Development of Bacterial Resistance to PVP-I

Studies by **Gocke DJ et al. (1985)**[7], **Anderson RL et al.**[33]and **Lanker-Klossner B et al.**[34] and have determined that short- or long-term exposure to PVP-I (10%) has not resulted in an increased level of bacterial resistance. In contrast to selected pressures asserted by antibiotics, long-term use of PVP-I (6 months) did not enhance bacterial-resistant strains.[34]

It is believed that the tendency not to develop resistance is due to iodine's effects on the cell wall which result in rapid cell death, whereas antibiotics usually interfere with biochemical pathways and microbes have an opportunity to compensate for these interactions.

In addition, **Kunisada T et al.**[35] and **Michel D and Zach GA.**[36] investigations have indicated that bacterial resistance to antibiotics had no influence on their sensitivity to PVP-I.

Clinical Uses Of Povidone Iodine In Periodontics

Anti-plaque action

Polyvinylpyrrolidone (povidone) PVP-iodine is an antiseptic with a broad antibacterial spectrum covering gram positive and negative bacteria and mycobacteria, Staphylococci species and Candida albicans and periodontal pathogens.

Maruniak J et al.[9] performed a study to evaluate the effect of 3 mouthrinses, Listerine Antiseptic (thymol), Peridex (chlorhexidine), Perimed

(povidone iodine and hydrogen peroxide), and a placebo (water) on the development of dental plaque and gingivitis, when used as the only oral hygiene procedure for 14 days. They concluded that both Peridex and Perimed were effective in reducing plaque and gingivitis when used as a 2 x daily mouthrinse by subjects refraining from other oral hygiene procedures. In vitro, a synergistic effect was assumed when inhibition was achieved with Perimed at the same or greater dilution than was achieved with povidone-iodine alone.

Greenstein Gary[37] in his review article, addressed the effects of povidone- iodine & its utility in the treatment of periodontal diseases. He stated that povidone iodine is a potent antiseptic and when used as a component in the rinse with hydrogen peroxide, it has the ability to however decrease the level of gingival inflammation. The study indicates that povidone iodine can be used as a component in the rinse or to treat gingivitis, further it was also found that subgingival irrigation with povidone iodine also reduces bacteremias.

Yoneyama A et al.[38] studied the effect of oral organic matter on the in vitro killing activity of PVP-I. In addition, they compared the in vitro short-time killing activity of PVP-I with those of other oral antiseptics using mouth-washing and gargling samples collected from healthy volunteers. When any of the mouth-washing and gargling samples were used, the standard (0.23–0.47%) or lower concentrations of PVP-I, killed methicillin-resistant Staphylococcus aureus (MRSA) and Pseudomonas aeruginosa, including multidrug-resistant strains, within 15–60 seconds in the presence of oral organic matter. 0.02% benzethonium chloride (BEC) and 0.002% chlorhexidine gluconate (CHG) did not show effects against MRSA and P. aeruginosa (including multidrug-resistant strains) in mouth-washing and gargling samples even after 60 seconds Results show that the in vitro killing activity of the standard concentration of PVP-I was hardly affected by the oral organic matter and that a mouth-washing or gargling solution containing PVP-I has a stronger bactericidal activity than BEC and CHG.

Neeraja R et al. [39] evaluated the efficacy of povidone-iodine and chlorhexidine mouth rinses on plaque Streptococcus mutans when used as an adjunct to restoration and compared the anti-microbial effect of 1% povidone-iodine and 0.2% chlorhexidine mouth rinses on plaque S. mutans count in age group of 6-12 years old school children. Forty-five study participants in the age group of 6-12 years with dmft (decay component) of three or four were selected from one government school. They were divided into three groups after the restorative treatment. Group-A, Group-B, and Group-C received 1% povidone-iodine mouth rinse, 0.2% chlorhexidine mouth rinse and placebo mouth rinse, respectively, twice daily for 14 days. The plaque sample was collected and S. mutans count was estimated at six phases: (1) Baseline, (2) 3 weeks after restoration, (3) First day after mouth rinse therapy, (4) 15 days after mouth rinse therapy, (5) 1 month and (6) 3 months after mouth rinse therapy. The results showed that after the restoration the percentage change in S. mutans count was 28.4%. Immediately after mouth rinse therapy there was significant reduction in S. mutans count in all the three groups. After which the count started to increase gradually and after 3 months the bacterial counts in the povidone-iodine group and placebo group were almost near the postrestorative count. The authors concluded that mouth rinses can be used as adjunct to restoration for short duration as

temporary measure in reduction of S. mutans count and restorations provide longer effect.

Sahrmann P et al. (2010)[40] in their systematic review on the effect of rinsing with povidone-iodine during nonsurgical periodontal therapy, assessed the additional effect of PVP-iodine as an adjunct to scaling and root planing compared with water, saline or no rinse in the treatment of chronic periodontitis. They concluded that the adjunctive use of PVP-iodine during scaling and root planing may increase the clinical pocket depth reduction, although the clinical significance is small to moderate.

Other clinical studies uses of povidone iodine in periodontics

A. Subgingival irrigation

Hoang T et al.[41] studied the microbiological and clinical effects of 10% PVP-iodine subgingival irrigation in periodontitis lesions showing radiographic evidence of subgingival calculus. The results showed that at 5 weeks post-treatment, subgingival irrigation with PVP-iodine together with scaling and root planing caused a 95% or greater reduction in total pathogen counts in 44% of pockets having ≥6 mm depth whereas scaling and root planing alone, povidone-iodine irrigation alone and water irrigation alone caused 95% reduction of total pathogens only in 6–13% of similar study sites. The authors concluded that the addition of subgingival PVP-iodine irrigation to conventional mechanical therapy may be a cost-effective means of reducing total counts of periodontal pathogens and helping control periodontal disease. However, subgingival irrigation with PVP-iodine without concomitant mechanical debridement might not improve microbiological and clinical variables in comparison with saline irrigation, at least not in sites with radiographic evidence of subgingival calculus**.**

Zanatta G et al. (2006)[42], evaluated the clinical effects of one-stage periodontal debridement with an ultrasonic instrument, associated with 0.5% povidone (PVP)-iodine irrigation in patients with chronic periodontitis. The results showed that there was a significant gain in clinical attachment level (CAL) in all groups. The N-benzoyl-L-arginine-p-nitroanilide (BAPNA) test showed a significant reduction in trypsin activity only during the first month ($P < 0.05$); at 3 months there were no differences compared to baseline ($P = 0.80$). The authors concluded that study provides no evidence that pvp-iodine is effective as an adjunct for one-stage periodontal debridement

B. Topical application

Rosling B et al.[43]studied the effect of topically-applied PVP-iodine, used as an adjunct both during basic non-surgical therapy and at re-treatment during the long-term maintenance of patients with advanced periodontal disease. 223 patients with advanced destructive periodontitis were recruited. Probing attachment level (PAL) determinations were performed annually. The results demonstrated that non-surgical periodontal therapy resulted in (i) improved gingival conditions, (ii) reduced PPD, (iii) gain in PAL. It was also documented that the topical application of 0.1% PVP-iodine in conjunction with the mechanical root debridement established conditions which further improved the outcome of therapy. The authors concluded that PVP-iodine, topically applied during subgingival instrumentation, may improve the outcome of non-surgical periodontal therapy.

Del Peloso Ribeiro E et al.[44]evaluated the effect of topically applied povidone-iodine (polyvinylpyrrolidone and iodine [PVP-I]) used as an adjunct to non-surgical therapy of furcation involvements. Forty-four patients presenting at least

one Class II furcation involvement that bled on probing with probing depth ≥5 mm were recruited. Patients were stratified into two treatment groups: 1) subgingival instrumentation by an ultrasonic device using PVP-I (10%) as the cooling liquid (test); and 2) identical treatment using distilled water as the cooling liquid (control). The N-benzoyl-L-arginine-p-nitroanilide (BAPNA) test was used to analyze the trypsin-like activity in dental biofilm. The results of the BAPNA test failed to demonstrate significant differences between groups. The authors concluded that the non-surgical therapy can effectively treat Class II furcation involvements, and the use of topically applied PVP-I as an adjunct to subgingival instrumentation does not provide additional benefits.

C. Preprocedural rinsing

Domingo MA et al.[45]conducted a study which determined the different types of microorganisms found in the saliva of individuals with varying degrees of oral hygiene, also determined the effectiveness of 1% Povidone Iodine (Betadine) 1% gargle oral antiseptic as a pre-procedural mouthrinse in individuals with varying degrees of oral hygiene, and lastly they determined the duration of the effectiveness of the solution. The result revealed that 1% Povidone iodine when used as a pre-procedural mouthrinse has a bactericidal effect in the microorganism concentration resulting in the reduction of surviving microorganisms up to four hours which was the limitation of the study.

Cherry M et al.[4], Studied the effect of preprocedural rinsing with povidone–iodine on bacteraemia caused by ultrasonic scaling. Sixty patients with gingivitis in which 30 rinsed with 0.9% saline and 30 with 7.5% povidone–iodine for 2 min. before ultrasonic scaling of FDI teeth 31–35. The results showed that oral bacteraemia occurred in 33.3% of the saline group and 10% of the povidone–iodine group. Bacteraemia magnitude was 0.1 colony-forming units /ml in the povidone–iodine subjects and 0.1–0.7 CFU/ml in the saline group. It was concluded that preprocedural rinsing with 7.5% povidone–iodine reduced the incidence and magnitude of bacteraemia and eliminated viridans streptococci from such bacteraemia. Povidone–iodine preprocedural rinsing may be helpful for ultrasonic scaling of gingivitis patients at risk of infective endocarditis.

Bidra AS et. al.[46], studied the optimal contact time and concentration for viricidal activity of oral preparation of povidone-iodine (PVP-I) against SARS-CoV-2 (‘corona virus’) to mitigate the risk and transmission of the virus in the dental practice. The authors concluded that in vitro PVP-I oral antiseptic preparations rapidly inactivated SARS-CoV-2 virus. The viricidal activity was present at the lowest concentration of 0.5 % PVP-I and at the lowest contact time of 15 seconds. This important finding can justifies the use of preprocedural oral rinsing with PVP-I and it may be useful as an adjunct to personal protective equipment, for dental and surgical specialties during the COVID-19 pandemic.

Riad A, Yilmaz G and Boccuzzi M.[47]discussed in their review about a new generation of iodine-based antiseptics 'super iodine' which was initiated recently to overcome the side effects of PVP-I. This non-bioactive iodine content was reduced from 31,600 ppm in PVP-I to several hundred in the new formula thus accelerating its effect, increasing its shelf-life, and minimising its potential irritancy and mucosal staining. It showed higher viricidal efficacy against coronaviruses and took as short as 30 seconds to inactivate alpha coronaviruses (229E) completely.[4] The same was observed in Rhinovirus

which was totally inactivated above the cytotoxicity level after exposure to the new I_2 formula for 30 seconds.

Moskowitz Herb & Mendenhall Michelle[48]evaluated and compared the efficacy and cytotoxicity of four different mouthwashes containing 1.5% hydrogen peroxide, 0.2% povidone, 0.12% chlorhexidine and 100 ppm molecular iodine for their ability to inactivate severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).The results showed that the 100 ppm molecular iodine rinse exhibited an log-reduction value (LRV) of 2.6 at 15 seconds and complete inactivation of SARS-CoV-2 at both 30 seconds and also at 60 seconds with LRV greater than 3.6 for each of those contact times. Further, the authors concluded that a preprocedural rinse with 100 ppm molecular iodine will play a vital role in combating COVID-19 pandemic by preventing the spread of infection.

Conclusion

Povidone iodine is a broard spectrum antimicrobial and is effective against most bacteria including putative periodontal pathogens. The bactericidal action of PVP-I remains on the concentration of the free iodine.Povidone iodine can be used for management of periodontal diseases. Itsshort 'time kill' action is useful in bactericidal action of oral bacteria.

Invitrostudies have shown thatPVP-I is effective in reducing viral load of corona virus (SARS CoV-2). Further clinical studies are required to see the effectiveness of PVP-I in periodontics.

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