REVIEW OF LITERATURE

According to Zimmerman and Sims in 1968-72 cited in The Essential Aloe vera,8-10 Aloevera inhibits the growth of S.aureus, S.viridans, Candida albicans, Cornybacteria xerosis. They found that aloe vera inhibited the growth of bacteria at 70 percent concentration and Candida at 50 percent concentration. Further testing showed it to be virucidal against Herpes simplex and Zoster. In 1971, it was also shown to kill Trichomonas vaginalis, a common cause of sexually transmitted vaginal infection. They also reported that that aloevera has specific antimicrobial activity at least against six bacteria, especially the more common Staphylococcus and Streptococcus.

Rowe and Forrest in the year 197811 described the possibility of contamination of impressions and a method of disinfection. They used 0.5% chlorhexidene in 70% alcohol and 0.02% chlorhexidene in 70% alcohol for spray disinfection of alginate and elastomeric impressions to evaluate their efficacy for disinfection. They found that impressions were contaminated even when 0.02% chlorhexidene in 70% alcohol was used for spray disinfection and were negative for contamination when 0.5% chlorhexidene in 70% alcohol was used as spray for disinfection. The organism before treatment were not identified. The technique detected aerobic organisms. Anaerobic organisms and viruses were not detected.

White, Giblin and Podesta in the year 199012 subjected full arch impressions of reversible hydrocolloids to disinfectants, Iodophor, neutral and acidic glutaraldehyde, phenol, sodium hypochlorite and cultured on brain heart infusion agar medium. The treatment procedures tested were immersion (10 minute, 30 minute and 1 day), spray and rinse-spray-rinse. They concluded that the most effective method was use of neutral glutaraldehyde and a rinse-spray-rinse technique.

Carrington laboratory Inc in 1991 cited in Aloe vera in Dentistry,13 assert that ACEMANNAN stimulates macrophages, one of the principal immune response steering
mechanism of body and that it has antiviral property. They stated that aloe vera interacts with
the body’s immune system, enhancing rather than overriding this system. In 1991, Carrington
laboratory announced of getting conditional FDA approval for the use of Acemannan as an
aid in the treatment of canine and feline fibro sarcoma. They also stated that Acemannan acts
synergestically with other drugs such as Azidothymide and Acyclovir.

Schwartz RS, Bradely DV Jr, Hilton TJ et al\textsuperscript{14} in the year 1994 did a study to evaluate
the effectiveness of four disinfectants (Iodofive, OMC II, 0.525 % Sodium hypochlorite,
Alcide LD) on irreversible hydrocolloid impression materials. They concluded that Alcide
LD achieved 99.99% or greater reduction in colony forming units for all five organisms plus
mixed oral flora. Sodium hypochlorite achieved 99.99% reduction in three of the five micro
organisms and mixed oral flora. Iodofive and OMC II were ineffective against all test
organisms and mixed oral flora.

Beyerle MP, Hensley DN, Bradley DV, Schwartz RS, Hilton TJ in 1994\textsuperscript{15} defined the
parameters for the use of sodium hypochlorite as a disinfectant on alginate by immersion
method. Irreversible hydrocolloid impressions contaminated with different bacteria were
immersed in varying concentrations of sodium hypochlorite for 1, 5, or 10 minutes. Dilute
solutions of sodium hypochlorite (0.525% or 0.0525%) produced a 4-log\textsubscript{10} (99.99%)
reduction in colony-forming units of \textit{Staphylococcus aureus}, \textit{Salmanella choleraesuis}, or
\textit{Pseudomonas aeruginosa} after 1 to 5 minutes' immersion, Full-strength sodium hypochlorite
15.25%) required 5 minutes to produce a 4-log\textsubscript{10} reduction of \textit{Bacillus subtilis}. A 4-log\textsubscript{10}
reduction of \textit{Mycobacterium bovis} was not obtained under any conditions examined.

Peter Atherton in 1997,\textsuperscript{16} documented that aloe vera can kill or prevent replication of
several bacterial organisms such as Streptococcus pyogens, Staphylococcus aureus,
Pseudomas aeurginosa, E. coli, Mycobacteruim tuberculosis. He also documents the presence
of lupeol that acts as an antiseptic and an analgesic. The presence of salicylic acid in aloevera
also imparts its pain relieving properties. The pain relieving action of aloe vera is due to the presence of a carboxypeptidase enzyme which inactivates Bradykinin. He also states that aloevera blocks the action of Thromboxane A2 which improves tissue survival following burns or surgery. Aloe vera because of its anti-tyrosinase activity also helps in reducing skin pigmentation.

Bull S in 2007, explained the many harmful effects that sodium hypochlorite has on individual and the environment and highlighted that ingestion of sodium hypochlorite may cause burns to the mouth, throat and stomach, nausea and vomiting, but is unlikely to cause serious injury. Ingestion of large amounts may cause vomiting, drooling, abdominal pain, diarrhoea and burns to the mouth and throat. Sodium hypochlorite is irritating to the skin and eyes, causing burns, inflammation and blister. If sodium hypochlorite is mixed with acidic products chlorine gas is produced. Breathing in chlorine gas for a short period of time can immediately cause burning sensation of the throat and lungs, eye and nose irritation, chest tightness, coughing and difficulty breathing. In more severe cases increased breathing rate, wheezing, swelling of the airways and respiratory failure may occur, the onset of which may take up to 36 hours.

George D, Bhat SS, Antony B in 2009, in their in vitro investigation compared the antimicrobial effectiveness of aloe vera tooth gel with two popular, commercially available dentifrices. The preliminary results showed that aloe vera tooth gel and the toothpastes were equally effective against Candida albicans, Streptococcus mutans, Lactobacillus acidophilus, Enterococcus faecalis, Prevotella intermedia, and Peptostreptococcus anaerobius. Aloe vera tooth gel demonstrated enhanced antibacterial effect against S. mitis.

Prakash P. Athiban, Bikash Jyoti Borthakur, S. Ganesan, B. Swathika in 2012, evaluated the efficacy of aloevera and its effectiveness in decontaminating gutta percha cones. A concentrated extract of aloevera was used to check for the efficacy using agar well
diffusion method. Presence of zones of diffusion was identified against E.coli, E.faecalis and Staph.aureus. New GP cones were then decontaminated for 1 minute and then placed in thyoglycolate broth. The zones of inhibition were measured as 24 mm, 21 mm and 24 mm, respectively. They concluded that aloevera is indeed effective as a GP decontaminant.