

Guest Editorial

The Future of Dental Bleaching

The desire for white teeth has been long present in the human history. Since the roman times, there are descriptions of attempts to remove stains from teeth and make them more beautiful. Many chemical substances were tested to achieve this goal. However, the hydrogen peroxide is the most used and efficient. At the beginning, high concentrated solutions were applied in office under rubber dam isolation, generally associated with heating promoted by a heated instrument, although this technique was quite difficult and time consuming. The introduction of carbamide peroxide gel, a combination of hydrogen peroxide and urea, used inside a customized tray, allowed the bleaching procedure to be performed at home, supervised by the professional. Thus, the whitening procedure became more popular, since this technique is very efficient and safe, with lower costs to the patient compared to the in-office technique. The main disadvantage is the longer treatment time necessary for achieving satisfactory results, not being accepted by some patients.

However, in recent years, the manufacturing of high concentrated hydrogen peroxide gels and photocured gingival barriers simplified the in office procedure, making it popular again. The use of light sources in order to increase the speed and the efficiency of the chemical reaction, generally Laser or LED devices, was widely diffused and many devices were put into the market. The use of this technique, however, rise a question related with the security of such procedure. The heating of tooth structure and pulp and the increasing of hydrogen peroxide penetration through enamel and dentin were associated with a higher risk of exacerbated pulpal reactions. Furthermore, some studies showed that the light activation did not increase the efficacy of the procedure compared to bleaching without light.

Hence, nowadays, there is a trend not to recommend light or heat activation when in office bleaching is performed. Some manufacturers started to produce less concentrated gels, such as 20%, for in office procedures. However, the acceptance of those materials was not enthusiastic. Recent studies showed that some transition metal salts, such as manganese gluconate, ferric chloride, ferrous sulphate, and others can be added to bleaching gel formulations to increase its efficiency, without the use of any external energy source. Some optical whiteners and bleaching substances without peroxide are also being studied.

Unfortunately, the efficacy of the bleaching process and the security of the technique are generally opposed to each other. The increase of the bleaching efficacy, by using more concentrated agents is generally related to augmented risks. On the other hand, a completely non-aggressive technique might not result in satisfactory bleaching outcomes. Further studies must focus on both factors at the same time.

Probably, the future of bleaching agents is related to the investigation of less concentrated gels supplemented with effective chemical activators, in order to diminish both the irritative potential to the pulpal cells and the damage to hard and soft tissues, while simultaneously enhancing the bleaching outcomes.

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