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REMOVAL OF ACETALDEHYDE FROM SALIVA BY MUCOADHESIVE FORMULATIONS CONTAINING CYSTEINE AND CHLORHEXIDINE DIACETATE: A POSSIBLE APPROACH TO THE PREVENTION OF ORAL CAVITY ALCOHOL-RELATED CANCER

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High alcohol intake is an independent risk factor for upper gastrointestinal (GI) tract cancers. In particular, there is increasing evidence that acetaldehyde, the first metabolite of ethanol, might be responsible for ethanol-associated carcinogenesis; it may be produced by mucosal alcohol dehydrogenases present in the upper digestive tract and especially by alcohol oxidation by oral bacterial microflora. Cysteine, a nonessential amino acid, has been shown to be able to react covalently with acetaldehyde to form 2-methylthiazolidine-4-carboxylic acid, thereby reducing its concentration. On the other hand, chlorhexidine, a well known antimicrobial agent, is widely used in antiseptic mouthwashes to reduce oral bacteria and it is therefore able to prevent acetaldehyde production. The aim of our work has been to develop buccoadhesive formulations (tablets) containing both L-cysteine and chlorhexidine diacetate and to verify their ability to reduce oral acetaldehyde produced after alcoholic drinks consumption. In an *in-vitro* system, the formulations prepared were able to release gradually their active principles and to neutralize acetaldehyde concentrations comparable to those ones present in saliva of heavy drinkers. Similarly, the *in-vivo* salivary levels of acetaldehyde produced by ethanol intake were significantly decreased by these tablets. It can be concluded that the buccal tablets here described represent an useful approach to the prevention of upper GI tract cancers ethanol-induced.