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Opinion

How Innovative Polymeric Materials Affect the Treatment of Xerostomia and Its Various Control Methods

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INTRODUCTION

The subjective experience of oral dryness that frequently results from decreased salivary flow (hyposalivation) is known in medicine as xerostomia (or dry mouth). Studies have revealed that despite its link to salivation, patients with xerostomia sometimes appear to have normal salivary flow. Thus, oral dryness that persists despite normal salivary gland activity is now referred to as "symptomatic" (or "pseudo") xerostomia. Patients with xerostomia typically have symptoms that have a substantial negative impact on their health as well as their social and emotional lives. Since the aetiology appears to be multifaceted, the diagnostic and therapeutic options for this ailment differ at the moment, and it is challenging to get good outcomes.

The polymer plays a major role in treating xerostomia. To demonstrate the critical significance of polymers in the development of various management schemes, whether in commerce or the research sector, particular examples of commercially available items with a polymeric base and cutting-edge drug delivery systems now under investigation are given. Additionally, the distinctive qualities that polymers give the items are exposed.

Diagnosis hyposalivation and xerostomia

Although hyposalivation and xerostomia are frequently used interchangeably, these terms do not describe the same symptoms. While xerostomia includes the subjective experience of oral dryness, hyposalivation only relates to the objective observation of decreased salivary flow as a result of external or internal stimuli. The sialometry test is the clinical procedure that is most frequently used to diagnose salivary dysfunction. Hyposalivation is thought to manifest when salivary flow rates are less than 0.1 mL/min at rest (UWS) or 0.7 mL/min under stimulation (SWS).

By measuring the hypofunction of the salivary glands, patients with xerostomia symptoms are distinguished in a methodical manner. A thorough medical history is necessary for the diagnosis of xerostomia, which includes a description of the patient's symptoms (patients with xerostomia frequently complain of a dry and sticky sensation in the mouth, which makes it difficult to swallow and speak, while a decrease in taste perception may also be present) and the medication taken. To assess potential xerostomia and salivary gland dysfunction, several scientifically validated questionnaires have been developed.

DESCRIPTION

Management of xerostomia

There are several different dose forms on the market, including cleansers, gels, sprays, and lozenges. The majority of commercial salivary substitutes are typically based on animal mucin or polymeric thickening and moisturising agents, such as cellulose based polymers (for example, Carboxy Methyl Cellulose (CMC), Hydroxyl Ethyl Cellulose (HEC), and Hydroxyl Propyl Methyl Cellulose (HPMC)), as well as water-soluble polymers, like xanthan gum and carbomer. The above mentioned polymers are used in saliva substitutes because they offer certain qualities in formulations and, therefore, satisfy the important criteria listed above. Even though it is not a natural lubricant, CMC the most often used polymer in the production of saliva substitutes has been shown to be a good clinical choice for the foundation of a saliva substitute, increasing a formulation's viscoelastic qualities.

The wetting characteristics of CMC containing saliva replacements on human enamel were demonstrated to be equal to those on human oral mucosa and significantly superior to those of human entire saliva. Additionally, a prospective cross-over research evaluating four different polymers used to make saliva substitutes in xerostomia patients revealed that most patients preferred the CMC based product due to its palatability and ease of usage. Other cellulose derivatives, such as Sodium Carboxymethyl Cellulose (SCMC), Methyl Cellulose (MC), and High-Purity Methyl Cellulose (HPMC), have also been used to make saliva substitutes. The investigated polymers give the final formulations several physical characteristics that are similar to

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those of human saliva, making them high-quality standard formulations.

CONCLUSION

The main distinguishing characteristic of xanthan is its extremely high low-shear viscosity paired with its substantially shear-thinning nature. Its relatively low viscosity at high shear makes it simple to mix, pour, and swallow, while its high viscosity at low shear gives colloidal suspensions stability and decent coating and suspension qualities. These characteristics may account for the synergistic effects that xanthan gum-containing saliva replacements have on the elastic and rheologic characteristics of human whole saliva.