Introduction:

The two main common dental pathologies affecting humankind are Periodontal diseases and dental caries. The bacteria and yeast residing in the oral cavity are responsible for the above mentioned conditions due to the plaque formation. Actinomyces, Actinobacillus, Streptococcus and Candida species are mainly related to the Periodontal diseases.¹

Pain when you bite or chew can be a sign of an abscess, especially if you also notice a bad smell or a bad taste in your mouth.²

Periodontal disease, a common cause of tooth loss, is an inflammatory response to the overgrowth of anaerobic organisms such as spirochaetes and bacteriodes and in some cases, micro-aerophilic organisms in the subgingival plaque.³

Dental procedures, whether simple or complex, are typically associated with pain.⁴

Delivery of drugs via the absorptive mucosa in various easily accessible body cavities, like the ocular, nasal, buccal, rectal and vaginal mucosae, has the advantage of bypassing the hepatogastrointestinal first pass elimination associated with oral administration. And due to the dual biophysical and biochemical nature of these mucosal membranes drugs with hydrophilic and/ or lipophilic characteristics can be readily absorbed.⁵

In the 1970s it became clear that the subgingival environment was not accessible to antibacterial agents delivered to the oral cavity in the form of toothpaste and mouthwashes due to their limited availability to penetrate into the subgingival environment.⁴

Oral health means being free of chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects such as cleft lip and palate, periodontal (gum) disease, tooth decay and tooth loss, and other diseases and disorders that affect the mouth and oral cavity. Oral diseases share common risk factors with the four leading chronic diseases -- cardiovascular diseases, cancer,
chronic respiratory diseases and diabetes -- including unhealthy diet, tobacco use, and harmful alcohol use. Poor oral hygiene is also a risk factor.

Oral Health Facts According to WHO states that: The most common oral diseases are dental cavities and periodontal (gum) disease. About 60-90% of school children worldwide have dental cavities. Severe periodontal (gum) disease, which may result in tooth loss, is found in 5-20% of middle-aged adults; the rate varies across geographical regions. Incidence of oral cancer ranges from one to 10 cases per 100 000 population in most countries. About 40-50% of people who are HIV-positive have oral fungal, bacterial or viral infections, which often occur early in the course of HIV infection. Traditional curative dental care is a significant economic burden for many high-income countries, where 5-10% of public health expenditure relates to oral health.6

Gingivitis is a form of periodontal disease. Periodontal disease involves inflammation and infection that destroys the tissues that support the teeth, including the gums, the periodontal ligaments, and the tooth sockets (alveolar bone). Long-term effects of plaque deposits leads to Periodontitis. Major cause of tooth decay is Plaque which is a sticky material made of bacteria, mucus, and food debris that develops on the exposed parts of the teeth. If plaque is not removed, it turns into a hard deposit called tartar that becomes trapped at the base of the tooth. Plaque and tartar irritate and inflame the gums. Bacteria and the toxins produced by these, cause the gums to become infected, swollen, and tender.7

Dioscorides Pedanius, in his essay De materia medica, states that some resins obtained from plants have beneficial action against protection of teeth8

Gum disease is an inflammation of the gums that can progress to affect the bone that surrounds and supports your teeth. It is caused by the bacteria in plaque, a sticky, colorless film that constantly forms on your teeth.2

Diseases in the oral cavity are caused due to the specific adherence mechanism of the oral bacteria. The oral microbiological flora is different and constantly changing. Of the numerous bacteria found in oral cavity about 22 are of prime importance. The major oral surfaces available
for colonization are the teeth, the mucosal epithelium, and dental plaque which is a complex microbial biofilm associated with teeth.  

The presence of foul smelling breath called Halitosis, is a common problem throughout the world. Oral malodour results from the release of volatile, foul smelling, substances into the breath. These include primarily the volatile sulphur compounds (VSCs), and also a number of other compounds.  

Microbial metabolism of amino acids in local debris results in unpleasant odour in the oral cavity. Volatile sulfur compounds (VSCs) in mouth air are produced from sulfur-containing amino acids originating from saliva, blood, the oral mucosa, and epithelial cell debris.

Periodontitis has received great attention because of its high prevalence worldwide and because it is easier to control (via mechanical cleaning of the diseased dentition) than most other risk factors.

The use of polymeric drug delivery devices in dentistry is a relatively new area of research.

Various devices for delivery to oral cavity include adhesive tablets, adhesive gels, adhesive patches, adhesive films etc.

From the literature review it is very well known that oral diseases are affecting a large amount of population. Thus there is a need for development of a formulation which is easy to use, can maintain the plasma drug concentration for an extended period of time and gives better patient compliance than the existing preparations.