

## Challenges in Pediatric Drug Formulations: Improving Compliance Through Taste Masking and Novel Drug Delivery Systems

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### Abstract:

Pediatric patients present unique challenges in the administration of oral medicines because of differences in age, swallowing ability, dosage requirements, sensory preferences, and medication acceptability. These considerations are particularly relevant in pediatric dentistry, where medicines may be prescribed for conditions such as dental pain and infection. Unpleasant taste, particularly bitterness, can be an important barrier to medication acceptance and may create difficulties for both children and caregivers. Oral liquid formulations are commonly used in children because they are easier to swallow and allow flexible dosing; however, sweeteners and acidic flavouring agents used to improve palatability may raise additional oral-health considerations, particularly with repeated exposure. Pharmaceutical formulation strategies such as polymer coating, microencapsulation, and other taste-masking techniques can help reduce unpleasant taste. Novel oral dosage forms, including mini-tablets, multiparticulate systems, orally disintegrating tablets, and oral films, may provide further options for improving acceptability and ease of administration. This review discusses the challenges associated with pediatric oral drug formulations from a pediatric dentistry perspective and examines how pharmaceutical formulation and novel drug-delivery approaches may improve medication acceptability while considering the oral health of children. The review also highlights the importance of balancing palatability with drug release, dose flexibility, and oral-health considerations during formulation development for children.

### Keywords:

Drug delivery, medication acceptability, pediatric dentistry, pediatric formulations, taste masking.