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Review Article

A Comparative Study of Marketed Pediatric Formulations

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Due to physiological, pharmacokinetic, and compliance-related considerations, pediatric medication formulations are very different from adult dose forms. Safety, effectiveness, palatability, and dose flexibility are the main considerations in the creation of pediatric marketed formulations. A variety of commercially available pediatric formulations, including syrups, suspensions, dry syrups, tablets, and innovative dosage forms, are highlighted in this review. Based on factors such stability, patient compliance, dosage accuracy, and convenience, a comparative analysis is provided. To improve therapeutic results in children, recent developments focus on taste-masked, preservative-free, and user-friendly formulations.

Keywords: Pediatric Formulations.

INTRODUCTION

Pediatric patients are a diverse group with particular treatment requirements. Children's swallowing abilities, taste preferences, and metabolic variances make administering drugs to them difficult. There is a need for specially created pediatric preparations because many traditional adult formulas are inappropriate. Due to their greater acceptability and simplicity of administration, oral formulations make up the bulk of pediatric formulations. However, dose flexibility, stability, and palatability must be taken into account while designing a formulation.

2. Types of Pediatric Preparations on the Market

Pediatric formulations fall under the following general categories:

1. Formulations that are ready to use

Syrups
• Oral remedies

Suspensions

Chewable tablets

• ODTs, or oral disintegrating tablets

These formulations are easy to use right away and don't need to be altered before administration.

2. Formulations that need to be modified or reconstituted

• Dry syrups (powder for suspension)
• Oral suspension granules
• Tablets that disperse
• Oral solution powders

These formulations are recommended for stability co ncerns and need to be diluted or prepared before use.

3. Comparative Study of Paediatric Dosage Forms

Dosage Form	Advantages	Disadvantages	Examples (Marketed)
Syrups	Palatable, easy administration	High sugar content, microbial growth	Paracetamol syrup

Suspensions	Suitable for insoluble drugs, better stability	Sedimentation, shaking required	Ibuprofen suspension
Dry Syrups	Enhanced shelf-life, stability	Requires reconstitution, risk of dosing errors	Antibiotic dry syrups
Solutions	Uniform dosing, rapid absorption	Stability issues, taste masking needed	Vitamin solutions
Chewable Tablets	Convenient, portable	Not suitable for very young children	Multivitamin chewables
ODTs (Orally Disintegrating Tablets)	No need for water, fast action	Costly, fragile	Ondansetron ODT

4. Evaluation Parameters

4.1 Taste

Taste masking is essential since children's obedience is decreased by unpleasant taste.

4.2 Consistency

Liquid formulations are less stable.

• Dry formulations: more stable

Because they prolong shelf life by preventing deterio ration, dry syrups are favored.

4.3 Accuracy of Dosage

• Liquids: adaptable but prone to measurement errors
• Tablets: precise but less adaptable

5. Challenges in Paediatric Formulation Development

- Dose adjustment based on body weight
- Taste masking of bitter drugs
- Stability of formulation
- Selection of safe excipients
- Lack of age-appropriate formulations

6. Current Developments in Pediatric Formulations

Current developments in pediatric preparations on the market include:

• Multiparticulate systems and mini-tablets
• ODTs, or oral disintegrating tablets
• Granules and powders based on sachets
• Formulations without preservatives

These developments enhance patient compliance, saf ety, and dose flexibility.

DISCUSSION

Comparative analysis indicates that no single dosage form is ideal for all paediatric patients. Liquid formulations are widely preferred for infants and young children, whereas solid dosage forms are gaining importance due to better stability and convenience. The choice depends on age, disease condition, drug properties, and patient compliance.

CONCLUSION

As pharmaceutical technology has advanced, pediatric marketed formulations have changed dramatically. The market is dominated by syrups and suspensions, but more recent dose forms including ODTs and mini-tablets are becoming more well-liked. For pediatric patients, the best course of treatment requires a balanced approach that takes stability, palatability, and dosage accuracy into account.

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