

Can young children swallow multiple coated mini-tablets? Results from an open-label, single-dose crossover study

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Introduction

The development of child-appropriate drug formulations can be challenging. Mini-tablets are advantageous over liquid formulations in overcoming challenges related to stability, taste, and dosage.^{1,2}

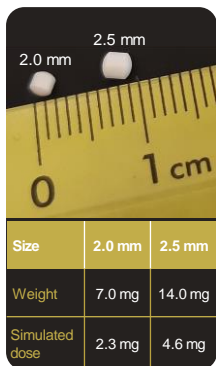
Study questions

Can children aged 1 month to 6 years swallow coated mini-tablets?

Do children prefer to swallow several smaller (2.0 mm) mini-tablets or fewer larger (2.5 mm) mini-tablets?

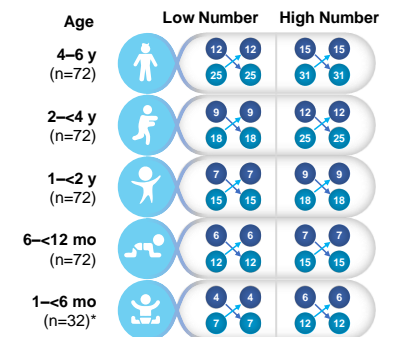
Formulation

- Drug-free coated mini-tablet formulation
- Mini-tablets were administered with soft food or a drink based on child's age and preference



Study design

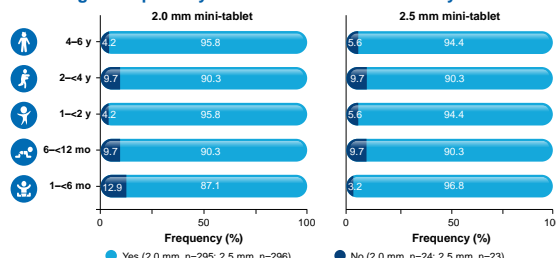
- **Open-label, single-dose cross over study** in children stratified into five age groups (N=320 randomized)
- The number of **2.0 mm** or **2.5 mm** mini-tablets were tested and administered in the appropriate quantities in the respective age groups to meet the estimated dose based on body weight (note, fewer 2.5 mm mini-tablets were used)



*Recruitment of children <6 months of age was prematurely stopped as decided by the investigator owing to 'swallowing the wrong way/coughing' event in 3 children; values inside the circle denotes number of tablets. y, years; mo, months

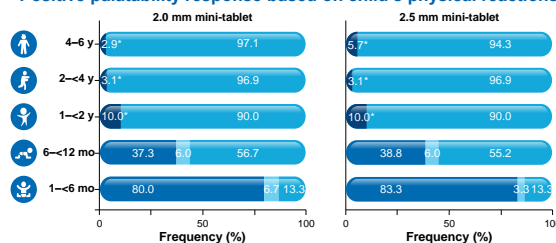
Results

High acceptability rates based on swallowability criteria



- **Acceptability rates based on swallowability were high and comparable** across tablet sizes, quantities, and age groups

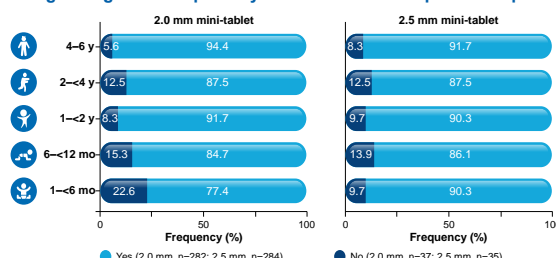
Positive palatability response based on child's physical reactions



- **Palatability: Rated as 'pleasant' in the majority of children** (except in the 1-6 month age group) across all tablet sizes, quantities, and specified age groups

- High proportion of 'neutral' reactions in children aged <1 year as per the developmental milestones with neutral body and mouth movements, and irregular face expression at this age

'High' or 'good' acceptability measured as a composite endpoint



- **Acceptability as a composite endpoint: 'High' or 'good' acceptability** (represented as 'yes' in the Figure) across all tablet sizes, quantities, and age groups

— No adverse events or deaths —

Key assessments³

Primary outcome

- **Acceptability derived from swallowability** scoring criteria (1, swallowed; 2, chewed/left over; 3, spat out; 4, choked on; and 5, refused to take)
 - Acceptable = 'Yes': Swallowability score is 1 or 2; Acceptable = 'No': Swallowability score is 3-5

Secondary outcomes

- **Palatability (investigator-observed):** Rated as 1 (pleasant) or 2 ('other'- sum of 'neutral' and 'unpleasant' assessments scored separately)
- **Acceptability as a composite endpoint** derived from palatability and swallowability scores that were assessed separately
 - Acceptable = 'Yes' (high or good acceptability); Acceptable = 'No' (low or no acceptability)
- **Safety**

Conclusions

- Children aged **6 months to 6 years** showed **acceptability** and **tolerability** for both **2.0 mm** and **2.5 mm** mini-tablets
- Use of coated mini-tablets in children **aged 1 to <6 months warrants careful consideration** due to differences in the development of swallowing capabilities in this age group
- **Coated mini-tablets** are potentially **suitable formulations** for **pediatric patients**

References

1. Breitkreutz J, et al. Paediatr Perinat Drug Ther. 1999;3:25-33.
2. Klingmann V, et al. J Pediatr. 2013;163:1728-1732.
3. Wargenau M, et al. Ther Innov Regul Sci. 2022;56:903-909

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Presenting author disclosure

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