Orodispersible Mini-tablets based on galenIQ™ 721

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INTRODUCTION

Orodispersible mini-tablets (ODMTs) are becoming increasingly more important to pharmaceutical companies, as the clinical benefit for peadiatric patients has been proven [1]. In literature mini-tablets are described as solid dosage forms with a diameter of 2-3 mm [2]. In this study ODMTs should be produced by using a direct compression grade of isomalt galenIQ™ 721. Enalapril maleate (EM) was chosen as a model drug, as the therapeutic need of this drugs for children is well known [3]. The study should evaluate the potential of galenIQ™ 721 for producing mini-tablets with respect to content uniformity, disintegration time, drug release, tensile strength and stability.

MATERIALS AND METHODS

Mini-tablets (MT) were produced on a rotary tablet press (Pressima, IMA-Kilian) using 2 mm 19-tips punches at a turret speed of 10 rpm. The loading of the MT amounted 16 % EM (Kraemer & Martin Pharma). Isomalt (galenIQ™ 721, Beneo-Palatinit) was used as filler. The impact of no disintegrant or 4 % of either Kollidon® CL or CL-SF (both BASF) was tested. Disintegration time (DT) was analysed with a modified method [4]. Tensile strength (TS) was determined using a Texture Analyser (TAXTplus, Stable Micro Systems) and calculated according to Fell and Newton [5]. Dissolution studies were performed in a basket apparatus following USP 39-NF 34 monography using UV-Vis spectrophotometry (Lambda 40, PerkinElmer) in phosphate buffer pH 6.8 for EM MT stirred at 50 rpm. The wavelength was set to 208 nm for EM. For the stability studies the MT were stored in polyethylene bags under ambient conditions. Acceptance value (AV) was determined using HPLC (Agilent 1260 Infinity, Agilent Technologies) following European Pharmacopoeia 9 (Ph.Eur. 2.9.40). After a storing time of 7 months DT and TS was determined, as the mechanical stability and disintegration time of the MT were chosen as quality attributes for ODMTs.

RESULTS

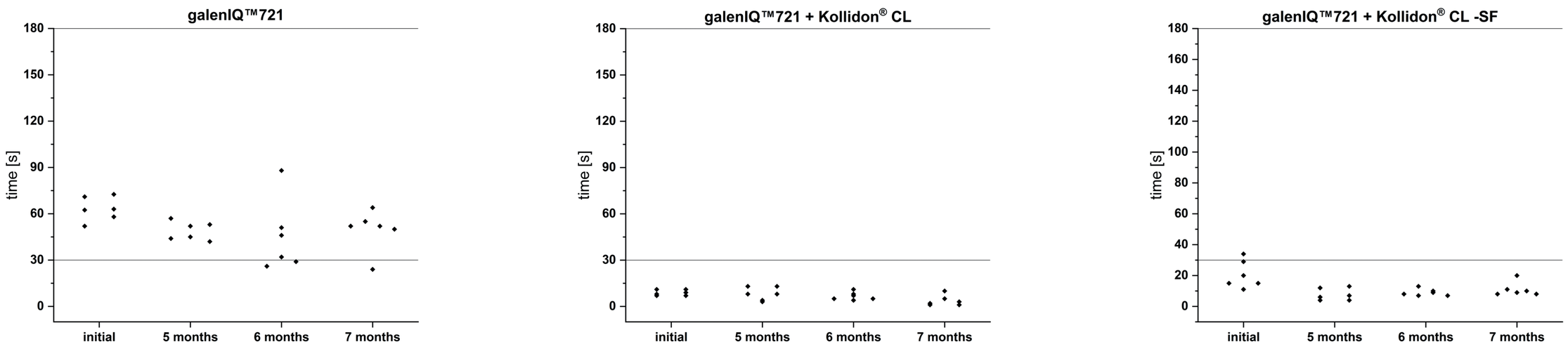

Fig.1 Measurement of disintegration times of mini-tablets based on galenIQ™ 721, galenIQ™ 721 and Kollidon® CL and galenIQ™ 721 and Kollidon® CL-SF
Initial values of disintegration times of mini-tablets and after 5, 6 and 7 months of storing under ambient conditions.
Lines represent FDA (30 s) and Ph.Eur. (180 s) limits.

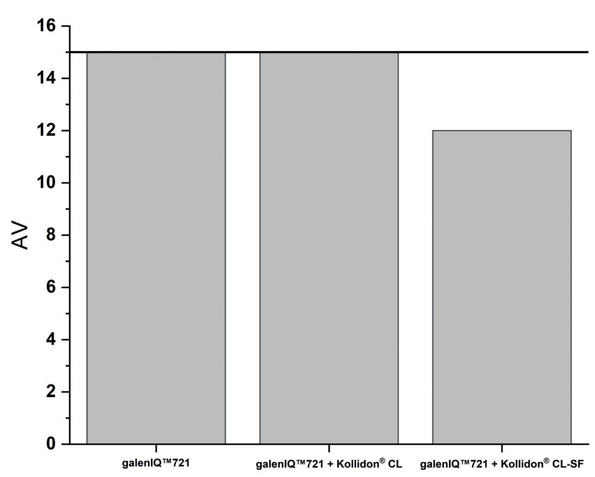

Fig.2 Acceptance value (AV) of EM-ODMTs according to Ph.Eur. 2.9.40
Line represents AV limit of 15

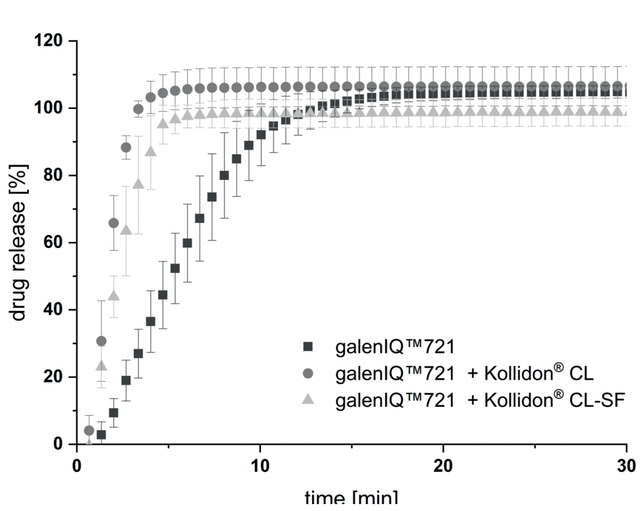

Fig.3 Dissolution profile of EM-ODMTs in a basket apparatus in 36 ± 0.5 °C phosphate buffer pH 6.8
n=6 ,mean ± SD

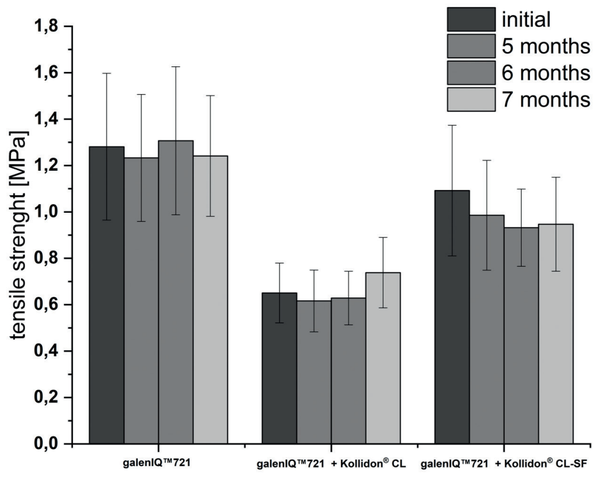

Fig.4 Tensile strength of EM-ODMTs.
Initial measurements and after 5, 6 and 7 months of storing under ambient conditions.
n=10, mean ± SD

CONCLUSION

The direct compression grade galenIQ™ 721 is suitable for developing orodispersibe mini-tablets.

- **Disintegration times fulfill Ph.Eur. (180 s) and FDA (30 s) criteria**
- **Acceptance values for all formulation ≤ 15**
- **Dissolution profiles show immediate release of the drug**
- **Orodispersible quality attributes are preserved during storage under ambient conditions**

References:
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