Common medicines for PRN use: Stability considerations in DAAs

Author
Robertson, Sherryl, Kockler, Jutta, Haywood, Alison, Glass, Beverley

Published
2014

Journal Title
Australian Journal of Pharmacy

Copyright Statement
Copyright 2014 Australian Journal of Pharmacy. The attached file is reproduced here in accordance with the copyright policy of the publisher. Please refer to the journal's website for access to the definitive, published version.

Downloaded from
http://hdl.handle.net/10072/62731

Link to published version
Common medicines for PRN use: Stability considerations in DAAs

Dr Sherryl Robertson BAppSc (Chem) Hons PhD, Jutta Kockler (Approbiertie Apotheikenin Germany), Dr Alison Haywood BPharm PhD, Professor Beverley D Glass BPharm BTech (Marketing) Hons BSc(Chem) Hons PhD. 1. School of Pharmacy and Molecular Sciences, James Cook University, Townsville. 2. School of Pharmacy, Griffith Health Institute, Griffith University, Gold Coast.

**INTRODUCTION**

Dose administration aids (DAAs), also known as multi-compartment compliance aids (MCCA or MCA) or monitored dosage systems (MDS), are designed to assist patients in managing their medicines by organising individual doses according to the prescribed dosing schedule.

A recent update by the Pharmaceutical Services Negotiating Committee (PSNC) (England and Wales) has emphasised that whenever a decision is made to provide medicines in a DAA, it must: (i) be appropriate for the patient and (ii) preserve the integrity of the medicine.

A recent report by the Royal Pharmaceutical Society, *Improving patient outcomes: the better use of multi-compartment compliance aids,* again highlighted that there is insufficient data in the published literature and no up-to-date authoritative resource that provides data on the stability of medicines, when stored outside of the manufacturer’s original packaging.

**RESULTS AND DISCUSSION**

Stability of metoclopramide (Maxolon and Pramin)

The physical stability for repackaged metoclopramide (Maxolon and Pramin) was met under all storage
conditions for a period of six
months as follows:
(i) Friability—maximum loss of 1% of
the tablet’s mass is acceptable;
(ii) Disintegration—all tablets
disintegrated after 15 minutes;10

(iii) Dissolution—amount of
metoclopramide in solution after 30
minutes is not less than 80% of the
stated amount.10

Tablet hardness and disintegration
data for the metoclopramide tablets
stored repackaged in DAAs, under
controlled room temperature
and accelerated conditions (40ºC;
75%RH), are shown in Figure 1.
Although for the Pramin tablets,
a decrease in hardness under
accelerated conditions accompanied
by a decrease in disintegration time
was observed, these results for
hardness and disintegration and
also friability (0.31% loss) remained
within compendial requirements.

Figure 1: Effect of exposure to various storage conditions (● = 25°C, ○ = 40°C/75%RH) on the physical stability (hardness and disintegration)
of metoclopramide tablets (Black = Maxolon, Red = Pramin) repackaged in DAAs. Values expressed for hardness as the mean ±95%
confidence interval (n = 10); and disintegration as the time taken for six tablets to disintegrate.

Some toothpastes are better than others at delivering optimum fluoride to help re-harden and
strengthen acid-softened enamel.1 Your customers can find information to complement your
counselling on acid wear and other oral health concerns at listentoyourmouth.com.au

No significant differences were seen in tablet weight and thickness of Maxolon and no organoleptic changes were observed for both brands over the storage period of six months. However, for Pramin, the change in weight and thickness over the six-month period was significant as shown in Figure 2, with most of that change occurring in the first month.

Dissolution rate profiles at \( t = 0 \) (dissolution under controlled room temperature was similar to that at \( t = 0 \)) and six months under accelerated conditions for Maxolon and Pramin are shown in Figure 3, with the required 80% dissolution of the metoclopramide after 30 minutes. Values expressed as the mean ± 95% confidence interval for six tablets.

Stability of repackaged Coloxyl with Senna

Tablet hardness and weight uniformity data for repackaged Coloxyl (docusate sodium) with Senna tablets, stored under controlled room temperature and accelerated conditions (40ºC/75%RH), are shown in Figure 4. As shown in the graphs, an increase in weight under accelerated conditions is accompanied by a decrease in hardness, although these results remain within compendial requirements. This compliance with compendial requirements is also confirmed by the results for friability, with only a 0.02% weight loss after six months under accelerated conditions. No dissolution test for docusate sodium tablets is described, due to the sparingly soluble nature of docusate sodium in water. Due to complexity of senna, a plant extract of senna glycosides, or sennosides containing a number of anthraquinone derivatives, chemical analysis using HPLC was not performed.

CONCLUSION

The quality of the metoclopramide tablets (Maxolon and Pramin) was confirmed under both ambient and accelerated conditions for a storage period of six months in a DAA that provides appropriate protection from air and moisture. The physical stability for Coloxyl with Senna tablets, in relation to weight uniformity, hardness and friability also complied with compendial requirements.

Metoclopramide hydrochloride, the active ingredient in Maxolon (supplied in a blister pack) and Pramin (supplied in an opaque white plastic bottle), is required to be stored protected from light in an airtight container.

FIGURE 2: Effect of exposure to accelerated storage conditions (O = 40ºC/75%RH) on the physical stability (weight = solid line; thickness = dotted line) of Pramin tablets repackaged in DAAs. Values expressed for weight \( n = 20 \) and thickness \( n = 10 \) as the mean ± 95% confidence interval.

FIGURE 3: Dissolution rate profiles for repackaged Maxolon (Black) and Pramin (Red) at \( t = 0 \) (solid line) and stored for six months at 40ºC/75%RH (dotted line). Grey horizontal line shows the required dissolution (80%) of metoclopramide to be achieved at 30 minutes. Values expressed as the mean ± 95% confidence interval for six tablets.

FIGURE 4: Effect of exposure to various storage conditions (Orange = 25ºC, Blue = 40ºC/75%RH) on the physical stability (weight uniformity and hardness) of Coloxyl with Senna tablets repackaged in DAAs. Values expressed for weight uniformity \( n = 20 \) and hardness \( n = 10 \) as the mean ± 95% confidence interval.
The Consumer Medicine Information (CMI) for both brands of metoclopramide states to 'keep your tablets in the bottle/pack until it is time to take them', and 'if you take the tablets out of the bottle/pack they may not keep well'.

For Coloxyl with Senna tablets, supplied in an opaque white plastic bottle, senna is required to be protected from moisture and light, while docusate sodium should be stored in an airtight container.

This study provides new evidence of the stability of commonly repackaged medicines stored, beyond the 28-day expiry in a DAA affording suitable protection against air, moisture and light.

Pharmacists must continue to use their professional judgement as part of individual patient assessment in deciding whether they should supply medicines in a DAA based on the benefits and risks to the individual patient.

Pharmacists can play an important role in advising patients, carers and other members of the health care team on the stability of medicines and the importance of storing and using their medicines correctly.

RECOMMENDATIONS FOR REPACKAGING INTO DAAs

Store DAAs in a cool, dry place protected from light, for example inside lockable cabinets or medicines trolleys. Avoid high humidity areas such as bathrooms.

Monitor the integrity of the DAA throughout the usage period since DAAs may be subjected to a reasonable amount of handling and accidental rupture of the blister seals may occur, allowing tablets to be exposed to increased humidity and air.

Pharmacists must continue to use their professional judgement as part of individual patient assessment in deciding whether they should supply medicines in a DAA based on the benefits and risks to the individual patient.

Pharmacists can play an important role in advising patients, carers and other members of the health care team on the stability of medicines and the importance of storing and using their medicines correctly.

Trapped food is the number one complaint amongst denture wearers. Your customers can find information to complement your counselling on denture adhesives and oral health concerns at listentoyourmouth.com.au

Know the signs. Feel the difference.

Getting stuck in here

Listen to your mouth

Polident is a registered trade mark of the GSK group of companies. GlaxoSmithKline Consumer Healthcare. 82 Hughes Avenue, Ermington NSW 2115. GSK0076C S&SH March 2014. Reference: 1. GSK Data on file 03A54.