



Persatuan Pengguna Pulau Pinang Consumers Association of Penang

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Press Statement/Letter to the Editor

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BEWARE OF DELIVERY OR STORAGE PROBLEMS WHEN BUYING MEDICINES ONLINE

Consumers are advised to be mindful of buying medications online or through mail-order as some medicines may become unsafe or ineffective from exposure to extreme temperature or humidity during transit from the retailer to you. Many pills and capsules need to be kept away from heat, air, moisture and sunlight because they can be damaged or lose their potency. If a life depends on proper dosage of a specific medication, this could have serious consequences.

Temperature and humidity variations can accelerate ageing of medications and affect their stability. Some thyroid drugs, for example, lack good stability and can cause major changes in the body's response with only very small differences in the amount of medication. There were more than 70 US Food and Drug Administration recalls for levothyroxine products (a thyroid drug) between 2007 and 2012 for this reason.

Antibiotics such as penicillin and cephalosporin are also easily weakened or rendered ineffective under improper temperature conditions.

For patients with such chronic illnesses as diabetes or heart disease, a damaged dose of a crucial medicine, like insulin or nitroglycerin, can be life-threatening. But even common medicines can break down with potentially harmful effects, and you can't always tell by looking at the pill or liquid that a problem has occurred, said Janet Engle, a pharmacist and past president of the American Pharmacists Association.

Drugs that break down can cause adverse events, and can be harmful.

- > **Antibiotics** — if they decay, they can cause stomach or kidney damage.
- > **Aspirin** — it breaks down even in low-moisture environments; can cause stomach upset (more than the usual).
- > **Hormone pills (for thyroid, birth control, etc)** — they are especially susceptible to temperature changes. These are often protein-based, and when protein gets hot it changes properties.
- > **Insulin, seizure medicines and anticoagulants** — small changes in doses in these medicines can greatly impact your health.
- > **Diagnostic test strips (eg: for blood sugar levels, pregnancy or ovulation)** — they are extremely sensitive to humidity. If moisture sticks to the strips, it will dilute the test liquid and possibly give a false reading.

Some drugs, if repacked (either for sale or in home use), and inappropriately kept, undergo chemical changes and can be harmful if ingested. The Centre for Adverse Reactions Monitoring in New Zealand reported a case of haematuria (blood in urine) in a patient who repacked dabigatran (a blood thinner)

into a weekly pill box. Dabigatran capsules absorb moisture from surroundings if removed from the original packaging. This increases its bioavailability, which increases the risk of adverse effects.

In hot environments, some medicines may change form and become difficult to use. Gelatine capsules may soften, ointments and creams may become runny (eg: hydrocortisone cream can separate and become useless in the heat), and suppositories may melt.

Buying pharmaceuticals online or via mail-order pharmacy are increasingly relied upon during the current pandemic. Good practice protocols on the part of retailers are thus important to ensure the integrity of a drug product and its treatment efficacy, and to prevent unnecessary harm to consumers. CAP calls on pharmacies and health retailers to strictly adhere to recommended storage criteria for drugs when distributing medications to patients.

Retailers also have a duty of care to ensure that the delivery service they engage does not expose medicines to extreme heat when it is being transported to consumers.

Improper medicine storage at home can also affect the quality, effectiveness and safety of medication.

Always read the instructions on the medication label for proper storage.

Mohideen Abdul Kader
President
Consumers' Association of Penang

APPENDIX

Where/How to Keep:

1. IN a cool, dry and dark place (eg: in a closet, drawer, or a kitchen cabinet away from the stove, sink, and any hot appliances), unless the label states otherwise.
2. MOST medicines should be stored below 25°C. Ideally, keep according to the recommended temperature (refer to the product insert).
 - > 2-8°C: Keep in the middle of refrigerator (eg: insulin, eye drops, reconstituted antibiotic suspension)
 - > 8-15°C: Keep in a cool dry place in the house (eg: soft gel capsules)
 - > 15-30°C: Room temperature, away from sunlight (eg: tablets and capsules)
3. IN its original container/packaging.
 - > Sensitive medications that come in an amber bottle (eg: potassium iodide and tinctures) should remain that way to prevent degradation. UV light can change their chemical structure.
 - > Effervescent, dispersible, buccal and sublingual tablets: The foil packaging or tightly closed glass/plastic container protects the product from moisture absorption and thereby prevents product degradation.
 - > Ciclosporin (a potent immunosuppressant): The ethanol required for solubility of the medicine vaporises out of the soft capsule when removed from the foil packaging.
 - > Sodium valproate (an epilepsy drug): These tablets must be kept in protective foil until taken. This protects the tablet from excess moisture absorption.
4. IN the fridge (the main compartment, not the freezer or refrigerator door). This applies to some liquid medicines (eg: syrups and suspensions) and injection vials, but *only if the label says so* – and *only if the meds do not contain preservatives*, as the effectiveness of the preservatives increases with the temperature and is reduced by refrigeration. Refrigerated medicines usually require temperature between 2 and 8°C to prevent rapid degrades. If your meds accidentally freeze, they are already unstable and should not be used.

Where/How NOT to keep:

1. BATHROOM. Many medications lose their potency when exposed to heat and humidity caused by running hot water. Some can be damaged and pose risks – eg: aspirin pills break down into vinegar and salicylic acid, which irritates the stomach.
2. PILL BOX. Pill mixing can cause some medications to lose their potency. A pill box is also not suitable for medications that need special containers to keep out moisture or light.
3. CAR. Medicine can get too hot, cold, or wet there.
4. WARM PLACES (eg: in front of a window) where the temperature can reach high levels.
5. REPACKING from a bigger to a smaller bottle. Some medicines (such as heart medications containing nitrate, eg: glyceryl trinitrate for angina) cannot be repacked and must be stored in the original container until it is time to take them. If they are exposed to oxygen, nitrate evaporates and becomes ineffective.

What else to do:

1. TAKE the cotton ball out of the medicine bottle. The cotton ball pulls moisture into the bottle.
2. STORE your medicine out of reach of children to prevent poisoning.
3. DO NOT take:
 - > any medicine that has changed colour, texture, or smell, even if it has not expired.
 - > pills that stick together, are harder or softer than normal, or are cracked or chipped.
4. THROW out medicines that are out of date; and old and unused medicines (they could have gone bad).
5. IF the drug arrives by post, pick it up right away and don't let it sit in a hot (or cold) mailbox any longer than necessary.