

Horizon Scanning

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EXTEMPORANEOUS MIXER (E-MIX)

Keywords: compounding, drug formulations, pharmacies, crushed tablets/capsules

SUMMARY OF TECHNOLOGY



Picture 1: Extemporaneous mixer or also known as E-mix

Extemporaneous mixer (E-mix) is a local innovation. This device is designed to prepare extemporaneous syrup from a tablet/capsule medication. The compounded medicine may be useful for patients with dysphagia who are unable to swallow solid medications, when an appropriate dose or dosage form is not commercially available, when patients require an individualised dose, or when medicines must be delivered via nasogastric or gastrostomy tubes.

This apparatus utilizes both mixing and grinding process simultaneously to produce a uniform extemporaneous preparation within a short period of time which is within two to four minutes.

It has three main components which is the mixer, grinder and the connector. The mixer and the grinder use a 12V direct current adapter as a power source. The grinder is responsible for grinding the tablets/capsules with an adjustable aperture to change the size of powder allowed to leave the grinder. The grinder is made of

ceramic, the same material medically used for mortar and pestle. A wing screw is used to connect the ceramic part to the connector. The mixer has a cross blade to ensure optimum mixing and has a detachable 500ml cup attached to it.

The mixer and the grinder is used simultaneously which causes the tablets to be grinded to a fine powder size which then falls into the mixing cup to be mixed thoroughly. This minimizes the time wasted compared to manual preparation as both processes can be done at the same time. Both the mixer and the grinder can be operated manually if needed (e.g. use for grinding purpose only) as both have its own power supply jack.

E-Mix is currently ready for manufacturing as the last prototype (4th prototype) has yielded excellent results when tested.

POTENTIAL FOR IMPACT

Extemporaneous compounding describes the use of traditional compounding techniques to manipulate chemical ingredients to produce appropriate dosage forms when no commercial medicines form is available. Many of medicines being manufactured are in the form of tablets and capsules.

A systematic review revealed that the prevalence of extemporaneous compounding practice is very low (less than 5%). Prescribing of compounded medicines occurs more frequently in paediatrics and for special patients' need.¹

There was no retrievable evidence regarding effectiveness of similar product available in the market to prove the potential effect of the device.

The product is claimed to produce uniformly-prepared syrups within shorter period time which is within two to four minutes in comparison to the traditionally-prepared medications by mortar and pestle which takes about 15 minutes. Thus this allows reducing the waiting time for patient in the pharmacy.

The closed system of the E-mix maintains the sterility of the compound produced as compared to the open system of mortar and pestle. The smaller surface of this product is believed to have lesser amount of compound adheres to the wall thus it is postulated that E-mix reduces the amount of drug lost during the grinding process.

The E-mix is also claimed to be useful as a household item and beneficial for caretakers to prepare daily extemporaneous compound especially for patient on Ryle's tube and paediatric patients. Other than time-saving, it also increases the integrity and sterility of the preparation.

The production cost for one unit of E-Mix is approximately RM 290 which is the same as the average cost for the conventional ceramic mortar and pestle. However, the suggested selling price of E-mix is estimated around RM650.00.

EVIDENCE

There was no retrievable evidence regarding this technology.

REFERENCES

1. Kristina S, Wiedyaningsih C, Widyakusuma N et al. Extemporaneous Compounding Practice By Pharmacists: A Systematic Review 2017. p42.
2. Medical Technologies Information Proforma (PTK-Bor-14) dated 29th September 2017; received via email on 13th July 2018.

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Disclaimer: TechScan report is prepared based on information available at the time of research and a limited literature. It is not a definitive statement on the safety, effectiveness or cost effectiveness of the health technology covered. Additionally, other relevant scientific findings may have been reported since completion of this report.

Horizon Scanning Unit,
MaHTAS,
Medical Development Division,
Ministry of Health, Malaysia,
Email: htamalaysia@moh.gov.my
Web: <http://www.moh.gov.my>

