

# Making a Foldable Asthma Inhaler with Origami Paper

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## 1. Background

### Consumption of plastic in medical field



- Replace practically **once** every **two** weeks  
= constant consumption<sup>[1]</sup> (26 pieces/year)
- Usable at home
- Do not need to be sterilised

### Achieving SDGs

Make a disposable and environmentally friendly inhaler to achieve goals of SDGs which are related to:

- Health
- Consumption
- Environment

Aiming to achieve these goals



➡ **Make an inhaler from papers**

## 2. Methods

### 1 Experiment 1

Focused on making a shape of inhaler with basic folding techniques.

### 2 Experiment 2

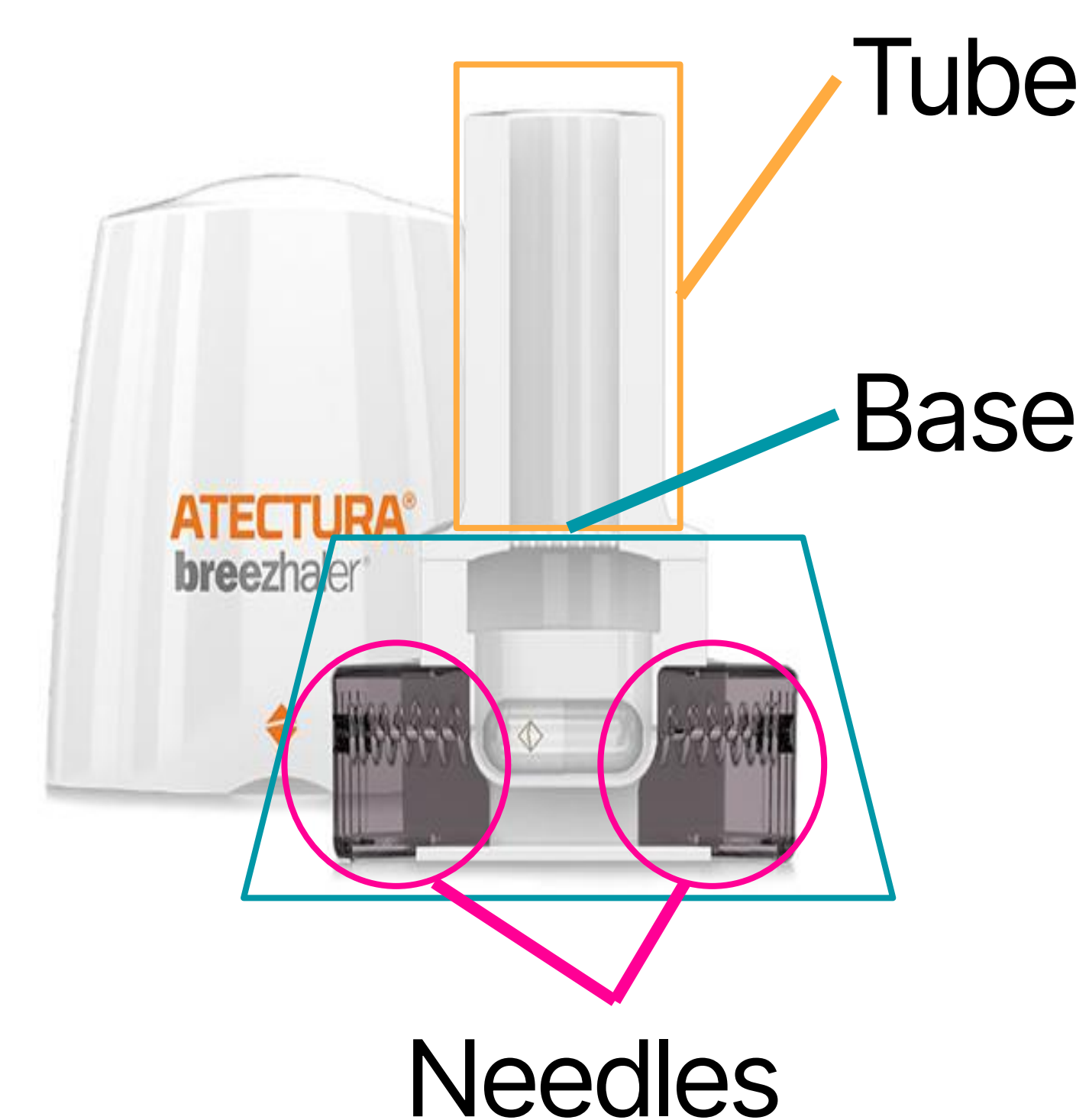
Focused on making the inhaler durable by applying goestatics.

### Experiment

- Fold an inhaler from *origami* paper.
- Test 31 times and evaluate the movement and function of an inhaler.

### - Significant points

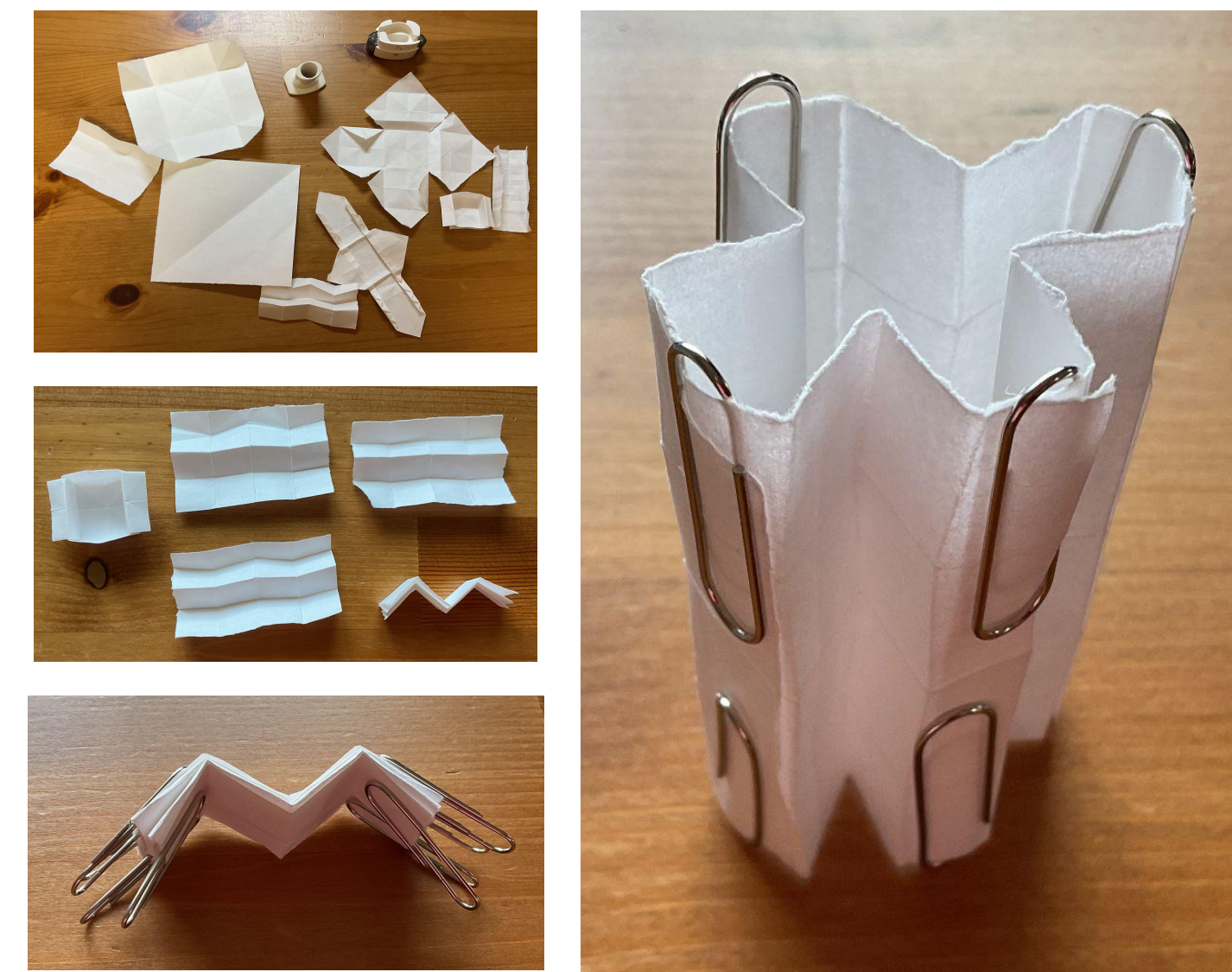
ATECTURA breezhaler



- Durable
- Foldable
- Non-plastic
- Practical as a medical equipment<sup>[3]</sup>
- Include functions of an inhaler<sup>[4][5][6]</sup>
- Useful design

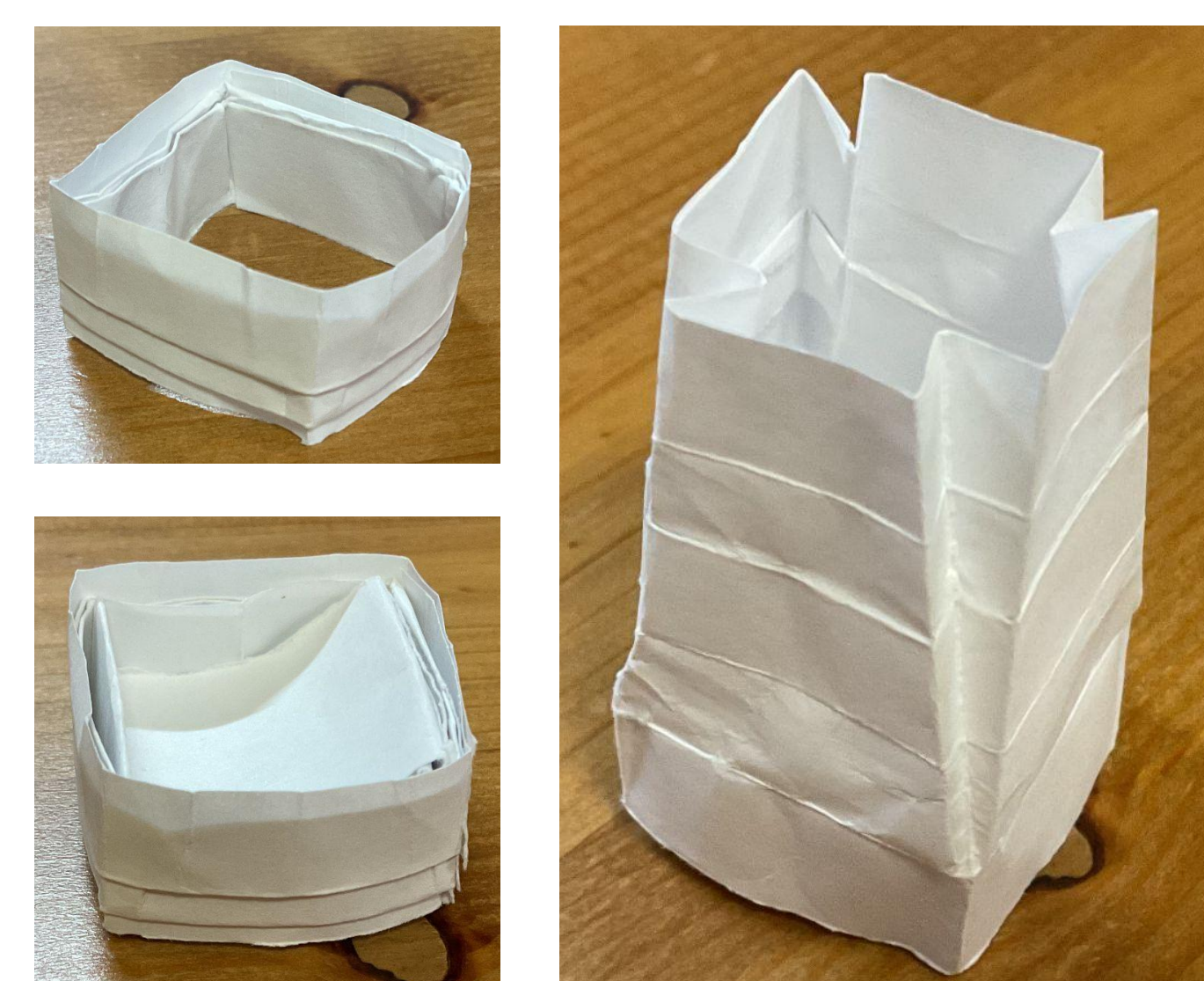
## 3. Results

### Experiment 1



- **Modeled** the structure of real inhaler.
- **Combination** of some parts of folded papers.
- It can stand by itself.
- It stood by itself after 31 trials
- Tore at 5th trial

### Experiment 2



- Improvement of each parts
  - **Base:** Folded and thickened.
  - **Tube:** Gained more complexity.
- It stood by itself after 9 trials
- It tore at 7th trial

## 4. Interpretation / Discussion

### Interpretation

- Foldable, non-plastic but it tore in the process of trial.
- Its structure is close to the real inhaler.
- It didn't include functions inside:  
an air hole / place for keeping capsules

### Discussion

- Include **functions** as an inhaler:
- The part to hold in the mouth was too **big**.
- A **gap** between the tube and the base:  
It'll lessen its practicality as an asthma inhaler.
- **Glue** was used to put the parts together after folding, but it is medical equipment  
: Seek other ways to make it durable **without** using glue.

## 5. Conclusion

Making the structure of the inhaler with origami paper is possible. As a future outlook, it can be improved as a sustainable medical equipment.

## 6. References

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