

# Biomaster in coffee cups

## Microbial study

### A proof of concept comparison between the bacterial loading recovered from standard reusable coffee cups and cups with Biomaster antimicrobial technology by Aston University\*

A microbiological study was undertaken to establish the bacterial loading recovered from reusable coffee cups when subjected to daily use and a variety of cleaning regimes.

#### Method

Eight standard coffee cups were selected from a major high street coffee outlet and distributed to volunteers in four groups representing common cup use and cleaning behaviour. The volunteers were also issued with a prototype reusable coffee cup treated with Biomaster antimicrobial additive. The daily usage and cleaning regime of the four groups was as follows:

- One coffee per day, washing the cup in hot water with detergent after use. The cup was left wet to dry naturally.
- One coffee per day, rinsing the cup under running cold water after use. The cup was left wet to dry naturally.
- One coffee per day, no cleaning of cup in between use. Coffee finished and left to dry naturally.
- One coffee per day, leaving 20ml of unconsumed coffee in the bottom of the cup which remained until next use, when the cup was emptied and rinsed with running cold water prior to refill.

Participants were instructed to purchase two coffee drinks containing milk of their choice each day, one in each cup, and record the time and drink selection in a daily log. After each drink the cup was cleaned or stored according to the group into which they had been allocated.

Following day five the two cups were returned to the laboratory for analysis

#### Figure 1

Bacteria recovered from the lid and internal surfaces of a standard and antimicrobial reusable coffee cup following a usage pattern of one drink per day and a cleaning regime of washing the cup after use in hot water with detergent, rinsing and leaving wet to dry naturally.

*Swabs taken from an ordinary reusable coffee cup compared with a cup containing antimicrobial technology show a reduction in levels of surface bacteria in the treated cup*

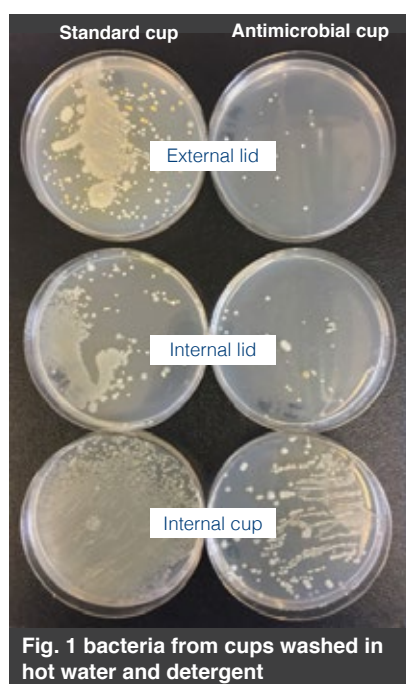


Fig. 1 bacteria from cups washed in hot water and detergent

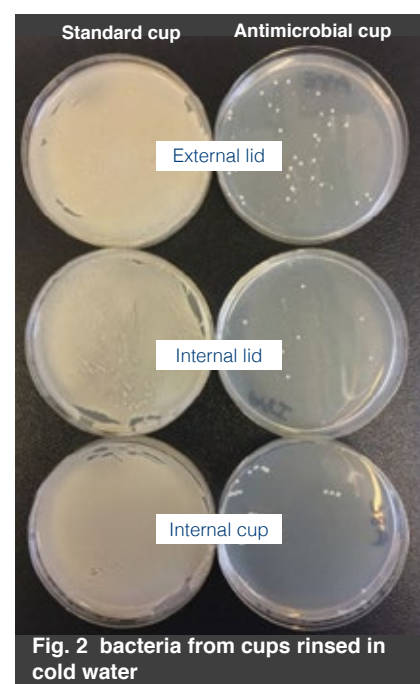


Fig. 2 bacteria from cups rinsed in cold water

**“ Our study shows that reusable coffee cups treated with antimicrobial technology are much less likely to become heavily contaminated with bacteria ”**

- Professor Anthony Hilton, Aston University

The standard cup reveals a heavy residual bacterial community post-cleaning across all three sample sites.

The antibacterial cup clearly demonstrates a reduced bacterial load compared to the standard cup, very notable on the lid components, but across all three sample sites.

#### Figure 2

Bacteria recovered from the lid and internal surfaces of a standard and antimicrobial reusable coffee cup following a usage pattern of one drink per day with an associated cup hygiene regime of leaving approximately 20ml of unconsumed drink in the bottom of the cup, which remained until the next use,

at which time the remaining coffee was discarded and the cup rinsed with cold water prior to use.

The standard cup reveals an extremely high residual bacterial load across all sampling sites.

By comparison, the antibacterial cup demonstrates an extremely low residual bacterial community on the external lid component, internal lid and the internal of the cup sampling sites.

#### Conclusion

Under all the usage profiles investigated, Biomaster delivered an effective reduction in the residual level of bacteria on the external and internal lid and internal structure of the cup.

\* Study was undertaken by Anthony Hilton, Professor of Applied Microbiology, Deputy Executive Dean of School of Life & Health Sciences, Aston University.