

### Supporting information

#### Quality of Commercial Alcohol-Based Hand Sanitizers Marketed in Kampala, Uganda during the COVID-19 Pandemic

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The complete results of the assay and pH determination of samples of alcohol-based hand sanitizers marketed in Kampala, Uganda are presented in Table 1.

**TABLE S1. ASSAY AND pH RESULTS OF ABHS SAMPLES**

| Sample code | Sample type | % alcohol on label | Content of alcohol (% v/v) |          |     |         |               |                     | pH  |
|-------------|-------------|--------------------|----------------------------|----------|-----|---------|---------------|---------------------|-----|
|             |             |                    | Glycerine                  | Methanol | IPA | Ethanol | Total alcohol | Total ethanol + IPA |     |
| UGS 1       | Liquid      | 80                 | -                          | -        | -   | 70.5    | 70.5          | 70.5                | 5.8 |
| UGS 2       | Liquid      | 80                 | -                          | -        | -   | 62.8    | 62.8          | 62.8                | 5.6 |
| UGS 3       | Gel         | 70                 | -                          | -        | -   | 54.1    | 54.1          | 54.1                | 6.3 |
| UGS 4       | Liquid      | 70                 | -                          | -        | -   | 63.0    | 63.0          | 63.0                | 5.1 |
| UGS 5       | Gel         | 85                 | 57.4                       | -        | -   | 27.8    | 27.8          | 27.8                | 6.8 |
| UGS 6       | Liquid      | 70                 | -                          | 40.8     | -   | 15.7    | 56.6          | 15.7                | 7.0 |
| UGS 7       | Gel         | N/S                | -                          | -        | -   | 58.7    | 58.7          | 58.7                | 7.4 |
| UGS 8       | Liquid      | 80                 | -                          | 98.0     | -   | -       | 98.0          | -                   | 7.7 |
| UGS 9       | Liquid      | 80                 | -                          | -        | -   | 78.2    | 78.2          | 78.2                | 4.7 |
| UGS 10      | Liquid      | 80                 | -                          | -        | -   | 82.0    | 82.0          | 82.0                | 5.4 |
| UGS 11      | Gel         | 70                 | -                          | -        | -   | 51.5    | 51.5          | 51.5                | 6.4 |
| UGS 12      | Liquid      | 70                 | 29.2                       | -        | -   | 71.3    | 71.3          | 71.3                | 4.7 |
| UGS 13      | Liquid      | 75                 | -                          | -        | -   | 64.1    | 64.1          | 64.1                | 6.5 |
| UGS 14      | Gel         | 75                 | -                          | -        | -   | 61.7    | 61.7          | 61.7                | 5.5 |
| UGS 15      | Liquid      | 75                 | -                          | -        | -   | 47.7    | 47.7          | 47.7                | 4.1 |
| UGS 16      | Liquid      | 70                 | -                          | -        | -   | 59.2    | 59.2          | 59.2                | 7.9 |

| Sample code | Sample type | % alcohol on label | Content of alcohol (% v/v) |          |      |         |               |                     | pH  |
|-------------|-------------|--------------------|----------------------------|----------|------|---------|---------------|---------------------|-----|
|             |             |                    | Glycerine                  | Methanol | IPA  | Ethanol | Total alcohol | Total ethanol + IPA |     |
| UGS 17      | Liquid      | 70                 | -                          | -        | -    | 58.4    | 58.4          | 58.4                | 8.1 |
| UGS 18      | Liquid      | 80                 | -                          | 80.1     | -    | -       | 80.1          | -                   | 7.3 |
| UGS 19      | Liquid      | 70                 | -                          | -        | -    | 80.3    | 80.3          | 80.3                | 4.1 |
| UGS 20      | Liquid      | 76.8               | -                          | -        | -    | 65.0    | 65.0          | 65.0                | 5.6 |
| UGS 21      | Liquid      | 80                 | -                          | -        | -    | 77.9    | 77.9          | 77.9                | 8.7 |
| UGS 22      | Liquid      | 80                 | -                          | -        | -    | 82.8    | 82.8          | 82.8                | 6.9 |
| UGS 23      | Gel         | 80                 | -                          | -        | -    | 69.5    | 69.5          | 69.5                | 7.6 |
| UGS 24      | Liquid      | 80                 | -                          | 25.7     | -    | 28.3    | 54.0          | 28.3                | 4.2 |
| UGS 25      | Liquid      | 80                 | -                          | -        | -    | 39.6    | 39.6          | 39.6                | 5.7 |
| UGS 26      | Gel         | 72                 | -                          | -        | -    | 70.1    | 70.1          | 70.1                | 7.0 |
| UGS 27      | Liquid      | 80                 | -                          | -        | -    | 67.4    | 67.4          | 67.4                | 2.6 |
| UGS 28      | Liquid      | 72.6               | -                          | -        | -    | 58.9    | 58.9          | 58.9                | 4.3 |
| UGS 29      | Liquid      | 65                 | -                          | -        | -    | 64.5    | 64.5          | 64.5                | 5.1 |
| UGS 30      | Liquid      | 70                 | -                          | -        | -    | 59.7    | 59.7          | 59.7                | 7.1 |
| UGS 31      | Gel         | 72.5               | -                          | -        | -    | 22.0    | 22.0          | 22.0                | 5.5 |
| UGS 32      | Liquid      | 77                 | -                          | -        | -    | 82.2    | 82.2          | 82.2                | 5.9 |
| UGS 33      | Gel         | N/S                | -                          | -        | -    | 51.1    | 51.1          | 51.1                | 6.2 |
| UGS 34      | Liquid      | 80                 | -                          | -        | -    | 61.5    | 61.5          | 61.5                | 8.1 |
| UGS 35      | Gel         | 80                 | -                          | -        | 6.2  | 32.9    | 39.1          | 39.1                | 6.9 |
| UGS 36      | Liquid      | 80                 | -                          | -        | -    | 79.9    | 79.9          | 79.9                | 5.1 |
| UGS 37      | Liquid      | 75                 | -                          | -        | -    | 67.9    | 67.9          | 67.9                | 7.5 |
| UGS 38      | Liquid      | 75                 | -                          | -        | -    | 67.4    | 67.4          | 67.4                | 6.8 |
| UGS 39      | Liquid      | 70                 | -                          | -        | -    | 62.3    | 62.3          | 62.3                | 7.7 |
| UGS 40      | Liquid      | 80                 | -                          | -        | -    | 61.5    | 61.5          | 61.5                | 7.8 |
| UGS 41      | Gel         | 75                 | -                          | -        | -    | 54.5    | 54.5          | 54.5                | 6.3 |
| UGS 42      | Liquid      | 70                 | -                          | -        | 89.2 | -       | 89.2          | 89.2                | 8.3 |

| Sample code | Sample type | % alcohol on label | Content of alcohol (% v/v) |          |      |         |               |                     | pH  |
|-------------|-------------|--------------------|----------------------------|----------|------|---------|---------------|---------------------|-----|
|             |             |                    | Glycerine                  | Methanol | IPA  | Ethanol | Total alcohol | Total ethanol + IPA |     |
| UGS 43      | Liquid      | N/S                | 4.5                        | 83.0     | -    | -       | 83.0          | -                   | 8.9 |
| UGS 44      | Gel         | N/S                | -                          | -        | -    | 69.4    | 69.4          | 69.4                | 7.3 |
| UGS 45      | Gel         | 62                 | -                          | -        | -    | -       | -             | -                   | 5.6 |
| UGS 46      | Liquid      | 70                 | -                          | -        | -    | 54.7    | 54.7          | 54.7                | 6.5 |
| UGS 47      | Gel         | 62                 | -                          | -        | -    | 9.3     | 9.3           | 9.3                 | 7.9 |
| UGS 48      | Gel         | 75                 | -                          | -        | -    | 55.5    | 55.5          | 55.5                | 7.4 |
| UGS 49      | Gel         | N/S                | -                          | -        | -    | 51.9    | 51.9          | 51.9                | 7.1 |
| UGS 50      | Liquid      | 80                 | -                          | -        | -    | 64.8    | 64.8          | 64.8                | 5.0 |
| UGS 51      | Liquid      | 80                 | -                          | -        | -    | 49.2    | 49.2          | 49.2                | 6.4 |
| UGS 52      | Liquid      | 70                 | -                          | -        | -    | 64.8    | 64.8          | 64.8                | 5.4 |
| UGS 53      | Gel         | 76                 | -                          | -        | -    | 70.6    | 70.6          | 70.6                | 6.1 |
| UGS 54      | Liquid      | 70                 | -                          | -        | -    | 61.9    | 61.9          | 61.9                | 6.8 |
| UGS 55      | Gel         | 80                 | -                          | -        | -    | 46.1    | 46.1          | 46.1                | 7.9 |
| UGS 56      | Liquid      | N/S                | 4.9                        | 84.8     | -    | -       | 84.8          | -                   | 5.7 |
| UGS 57      | Liquid      | 75                 | -                          | -        | -    | 65.7    | 65.7          | 65.7                | 4.4 |
| UGS 58      | Gel         | 80                 | -                          | -        | -    | 50.7    | 50.7          | 50.7                | 8.3 |
| UGS 59      | Liquid      | 70                 | -                          | -        | -    | 72.4    | 72.4          | 72.4                | 8.7 |
| UGS 60      | Liquid      | 70                 | -                          | -        | -    | 80.5    | 80.5          | 80.5                | 4.9 |
| UGS 61      | Liquid      | 70                 | -                          | -        | -    | 76.3    | 76.3          | 76.3                | 4.7 |
| UGS 62      | Liquid      | 70                 | -                          | -        | -    | 79.6    | 79.6          | 79.6                | 4.7 |
| UGS 63      | Liquid      | 70                 | -                          | -        | -    | 75.0    | 75.0          | 75.0                | 5.2 |
| UGS 64      | Liquid      | N/S                | 5.3                        | -        | 46.4 | -       | 46.4          | 46.4                | 4.5 |
| UGS 65      | Liquid      | 64                 | -                          | -        | -    | 66.2    | 66.2          | 66.2                | 6.0 |
| UGS 66      | Liquid      | 70                 | -                          | -        | -    | 62.1    | 62.1          | 62.1                | 5.0 |
| UGS 67      | Liquid      | N/S                | -                          | -        | 25.5 | 73.5    | 99.0          | 131.1               | 4.9 |
| UGS 68      | Gel         | N/S                | -                          | -        | -    | 68.3    | 68.3          | 68.3                | 8.0 |

| Sample code | Sample type | % alcohol on label | Content of alcohol (% v/v) |          |      |         |               |                     | pH  |
|-------------|-------------|--------------------|----------------------------|----------|------|---------|---------------|---------------------|-----|
|             |             |                    | Glycerine                  | Methanol | IPA  | Ethanol | Total alcohol | Total ethanol + IPA |     |
| UGS 69      | Liquid      | 70                 | -                          | -        | -    | 39.1    | 39.1          | 39.1                | 6.8 |
| UGS 70      | Liquid      | 70                 | -                          | -        | -    | 49.2    | 49.2          | 49.2                | 8.0 |
| UGS 71      | Gel         | 75                 | -                          | -        | -    | 56.7    | 56.7          | 56.7                | 5.0 |
| UGS 72      | Gel         | 70                 | -                          | -        | -    | 63.6    | 63.6          | 63.6                | 7.3 |
| UGS 73      | Liquid      | 70                 | -                          | -        | -    | 58.9    | 58.9          | 58.9                | 4.1 |
| UGS 74      | Liquid      | 80                 | -                          | -        | -    | 36.2    | 36.2          | 36.2                | 3.4 |
| UGS 75      | Liquid      | 75                 | -                          | -        | -    | 57.0    | 57.0          | 57.0                | 4.8 |
| UGS 76      | Liquid      | 70                 | -                          | -        | -    | 58.8    | 58.8          | 58.8                | 5.8 |
| UGS 77      | Liquid      | N/S                | -                          | .-       | -    | -       | -             | -                   | 7.2 |
| UGS 78      | Liquid      | 70                 | -                          | -        | -    | 68.1    | 68.1          | 68.1                | 5.8 |
| UGS 79      | Liquid      | 80                 | -                          | -        | -    | 60.3    | 60.3          | 60.3                | 4.9 |
| UGS 80      | Gel         | 75                 | -                          | -        | -    | 59.0    | 59.0          | 59.0                | 5.6 |
| UGS 81      | Gel         | 70                 | -                          | -        | 56.5 | -       | 56.5          | 56.5                | 7.4 |
| UGS 82      | Liquid      | 60                 | -                          | -        | -    | 67.0    | 67.0          | 67.0                | 3.8 |
| UGS 83      | Liquid      | 75                 | -                          | -        | -    | 70.4    | 70.4          | 70.4                | 4.9 |
| UGS 84      | Gel         | 75                 | -                          | -        | -    | 71.8    | 71.8          | 71.8                | 4.7 |
| UGS 85      | Liquid      | 75                 | -                          | -        | -    | 63.0    | 63.0          | 63.0                | 7.4 |
| UGS 86      | Gel         | 60                 | -                          | -        | 57.3 | -       | 57.3          | 57.3                | 7.3 |
| UGS 87      | Gel         | 65                 | -                          | -        | -    | 60.5    | 60.5          | 60.5                | 6.3 |
| UGS 88      | Gel         | 60+                | -                          | -        | -    | 61.9    | 61.9          | 61.9                | 7.1 |
| UGS 89      | Liquid      | 80                 | -                          | -        | 47.4 | -       | 47.4          | 47.4                | 7.5 |
| UGS 90      | Liquid      | 75                 | -                          | -        | -    | 55.4    | 55.4          | 55.4                | 5.8 |
| UGS 91      | Liquid      | 80                 | -                          | -        | -    | 75.6    | 75.6          | 75.6                | 4.9 |
| UGS 92      | Liquid      | 80                 | -                          | -        | -    | 67.7    | 67.7          | 67.7                | 6.2 |
| UGS 93      | Liquid      | 67                 | -                          | -        | -    | 62.5    | 62.5          | 62.5                | 3.6 |
| UGS 94      | Liquid      | 80                 | -                          | -        | -    | 63.2    | 63.2          | 63.2                | 5.6 |

| Sample code | Sample type | % alcohol on label | Content of alcohol (% v/v) |          |     |         |               |                     | pH  |
|-------------|-------------|--------------------|----------------------------|----------|-----|---------|---------------|---------------------|-----|
|             |             |                    | Glycerine                  | Methanol | IPA | Ethanol | Total alcohol | Total ethanol + IPA |     |
| UGS 95      | Gel         | N/S                | -                          | -        | -   | 51.7    | 51.7          | 51.7                | 6.4 |
| UGS 96      | Liquid      | 80                 | -                          | -        | -   | 57.4    | 57.4          | 57.4                | 7.3 |
| UGS 97      | Liquid      | N/S                | -                          | -        | -   | 66.7    | 66.7          | 66.7                | 6.3 |
| UGS 98      | Liquid      | 70                 | -                          | -        | -   | 63.0    | 63.0          | 63.0                | 6.0 |
| UGS 99      | Liquid      | 70                 | -                          | -        | -   | 79.0    | 79.0          | 79.0                | 6.3 |
| UGS 100     | Liquid      | 70                 | -                          | -        | -   | 64.4    | 64.4          | 64.4                | 5.8 |
| UGS 101     | Gel         | 70                 | -                          | -        | -   | 12.2    | 12.2          | 12.2                | 7.5 |
| UGS 102     | Gel         | 62                 | -                          | -        | -   | 70.8    | 70.8          | 70.8                | 6.0 |
| UGS 103     | Gel         | 70                 | -                          | -        | -   | 63.4    | 63.4          | 63.4                | 7.6 |
| UGS 104     | Liquid      | 80                 | -                          | -        | -   | 72.3    | 72.3          | 72.3                | 6.3 |
| UGS 105     | Liquid      | 74.5               | 6.9                        | -        | -   | 66.0    | 66.0          | 66.0                | 3.7 |
| UGS 106     | Liquid      | 80                 | -                          | 80.3     | -   | -       | 80.3          | -                   | 6.9 |
| UGS 107     | Liquid      | 80                 | -                          | -        | -   | 80.4    | 80.4          | 80.4                | 7.5 |
| UGS 108     | Liquid      | 70                 | -                          | -        | -   | 59.6    | 59.6          | 59.6                | 6.8 |
| UGS 109     | Gel         | 70                 | -                          | -        | -   | 48.0    | 48.0          | 48.0                | 6.9 |
| UGS 110     | Liquid      | 70                 | -                          | -        | -   | 83.3    | 83.3          | 83.3                | 4.5 |
| UGS 111     | Liquid      | 70                 | -                          | -        | -   | 95.1    | 95.1          | 95.1                | 5.3 |
| UGS 112     | Liquid      | 80                 | -                          | -        | -   | 71.4    | 71.4          | 71.4                | 4.2 |
| UGS 113     | Liquid      | 75                 | -                          | -        | -   | 70.2    | 70.2          | 70.2                | 3.9 |
| UGS 114     | Liquid      | 70                 | -                          | -        | -   | 53.2    | 53.2          | 53.2                | 4.0 |
| UGS 115     | Liquid      | 75                 | -                          | -        | -   | 67.6    | 67.6          | 67.6                | 7.6 |
| UGS 116     | Liquid      | 70                 | -                          | -        | -   | 61.2    | 61.2          | 61.2                | 4.5 |
| UGS 117     | Liquid      | 70                 | -                          | -        | -   | 66.5    | 66.5          | 66.5                | 4.8 |
| UGS 118     | Liquid      | N/S                | -                          | -        | -   | 62.2    | 62.2          | 62.2                | 6.8 |
| UGS 119     | Gel         | 70                 | -                          | -        | -   | 62.3    | 62.3          | 62.3                | 6.6 |
| UGS 120     | Liquid      | 75                 | -                          | -        | 7.6 | 55.7    | 63.3          | 63.3                | 6.6 |

| Sample code | Sample type | % alcohol on label | Content of alcohol (% v/v) |          |     |         |               |                     | pH  |
|-------------|-------------|--------------------|----------------------------|----------|-----|---------|---------------|---------------------|-----|
|             |             |                    | Glycerine                  | Methanol | IPA | Ethanol | Total alcohol | Total ethanol + IPA |     |
| UGS 121     | Liquid      | 80                 | -                          | -        | -   | 76.5    | 76.5          | 76.5                | 6.4 |
| UGS 122     | Liquid      | 80                 | -                          | -        | -   | 55.6    | 55.6          | 55.6                | 7.3 |
| UGS 123     | Gel         | 80                 | -                          | -        | -   | 48.5    | 48.5          | 48.5                | 5.2 |
| UGS 124     | Gel         | 70                 | -                          | -        | -   | 21.7    | 21.7          | 21.7                | 6.0 |
| UGS 125     | Liquid      | 75                 | -                          | -        | -   | 62.9    | 62.9          | 62.9                | 4.5 |
| UGS 126     | Liquid      | N/S                | -                          | -        | 3.7 | 29.4    | 33.1          | 33.1                | 7.2 |
| UGS 127     | Liquid      | 70                 | -                          | -        | -   | 65.4    | 65.4          | 65.4                | 3.6 |
| UGS 128     | Liquid      | N/S                | -                          | -        | -   | 71.5    | 71.5          | 71.5                | 4.8 |
| UGS 129     | Liquid      | 80                 | -                          | -        | -   | 65.0    | 65.0          | 65.0                | 4.6 |
| UGS 130     | Liquid      | 80                 | -                          | -        | -   | 67.4    | 67.4          | 67.4                | 5.4 |

**Key:** N/S = not stated, IPA = isopropyl alcohol