**DEVELOPMENT OF SALINE LOADED MASK MATERIALS, EVALUATION OF THE ANTIMICROBIAL EFFICACY AND SURVIVABILITY OF SELECTED BACTERIA ON THESE MASK MATERIALS**

**Supplementary data**

**Table S1.** Antimicrobial activity extended by salt powders (NaCl, IS and OSS).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Types of salt powders | Mean Zone of Inhibition (mm) | | | | | | |
| E. coli | *P. aeruginosa* | P. vulgaris | *S. typhi* | Oral microbiome | *Penicillium* spp | Rhizopus  spp |
| NaCl | 33.0a | 22.7a | 18.0ab | 20.7a | 37.3b | - | - |
| IS | 33.0a | 21.7a | 19.7b | 20.7a | 35.7ab | - | - |
| OSS | 31.0a | 21.0a | 15.3a | 21.0a | 32.7a | - | - |
| *ab Column means having different subscript letters differ significantly (P< Tukey’s (HSD) 0.05).* | | | | | | | |

**Table S2.** Antimicrobial activity extended by saline solutions (30% NaCl, 30% IS and 30% OSS).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Types of salts Solutions | Mean Zone of Inhibition (mm) | | | | | | | |
| E. coli | *P. aeruginosa* | P. vulgaris | *S. typhi* | *S. aureus* | Oral Microbiome | *Penicillium* spp | Rhizopus  spp |
| 30% NaCl | - | - | - | - | - | - | - | - |
| 30% IS | - | - | - | - | - | - | - | - |
| 30% OSS | - | - | - | - | - | - | - | - |

**Table S3**. Antimicrobial activities of using NaHCO3 powder and its solutions.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sodium bicarbonate | Mean Zone of Inhibition (mm) | | | | | | | |
| E. coli | *P. aeruginosa* | P. vulgaris | *S. typhi* | *S. aureus* | Oral Microbiome | *Penicillium* spp | Rhizopus  spp |
| Powder | 31.3c | 21.7c | 17.3b | 32.7c | 27.7b | 31.0a | 24.7a | 40.0c |
| 5% solution | 0a | 0a | 0a | 0a | 0a | 31.0a | 23.7a | 16.7a |
| 10% solution | 25.3b | 11.7b | 0a | 17.3b | 0a | 31.0a | 25.3a | 26.7b |
| *abc Column means having different subscript letters differ significantly (P< Tukey’s (HSD) 0.05).* | | | | | | | | |

**Table S4**. Antimicrobial activities of saline solutions (30% IS+10% NaHCO3 and 30% OSS+10% NaHCO3).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Saline solutions | Mean Zone of Inhibition (mm) | | | | | | | |
| E. coli | *P. aeruginosa* | P. vulgaris | *S. typhi* | *S. aureus* | Oral Microbiome | *Penicillium* spp | Rhizopus  spp |
| 30% IS +10% NaHCO3 | 13.0a | 12.7a | 14.3a | 12.0a | 15.0a | 31.7a | - | 17.3a |
| 30% OSS +10% NaHCO3 | 17.3b | 19.0b | 20.0b | 15.7b | 25.3b | 32.0a | - | 22.0b |

*ac Column means having different subscript letters differ significantly (P< t-test) 0.05).*

**Table S5**. Antimicrobial efficacy of CA surgical mask material (wet and dried) loaded with saline solutions (30% NaCl, 30% IS, 30% OSS) sat varying soaking time intervals.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Soaking Time | Mean Zone of Inhibition (mm) | | | | | | | | |
| E. coli | *P. aeruginosa* | P. vulgaris | | *S. typhi* | *S. aureus* | Oral Microbiome | *Penicillium* spp | Rhizopus  spp |
| 30% NaCl | | | | | | | | | |
| Control | - | - | - | - | | - | - | - | - |
| 24 h | - | - | - | - | | - | - | - | - |
| 1hr | - | - | - | - | | - | - | - | - |
| 30 min | - | - | - | - | | - | - | - | - |
| 5 min | - | - | - | - | | - | - | - | - |
| 30% IS | | | | | | | | | |
| 30 min | - | - | - | - | | - | - | - | - |
| 5 min | - | - | - | - | | - | - | - | - |
| 30% OSS | | | | | | | | | |
| 30 min | - | - | - | - | | - | - | - | - |
| 5 min | - | - | - | - | | - | - | - | - |

**Table S6**. Antimicrobial efficacy of the dried whole surgical mask material and middle layer of the CA mask with various saline solutions (30% NaCl or 30% IS or 30% OSS +10% NaHCO3) at 24 hours soaking time.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Saline with 10% NaHCO3 | Mean Zone of Inhibition (mm) | | | | | | | |
| E. coli | *P. aeruginosa* | P. vulgaris | *S. typhi* | *S. aureus* | Oral Microbiome | *Penicillium* spp | Rhizopus  spp |
| Whole mask material | | | | | | | | |
| 30% NaCl + 10% NaHCO3 | - | - | - | - | - | 13 | - | - |
| 30% IS +10% NaHCO3 | - | - | - | - | - | 11 | - | - |
| 30% OSS +10% NaHCO3 | - | - | - | - | - | 13 |  |  |
| Middle layer mask material | | | | | | | | |
| 30% NaCl + 10% NaHCO3 | - | - | - | - | - | 17 | - | - |
| 30% IS +10% NaHCO3 | - | - | - | - | - | 15 | - | - |
| 30% OSS +10% NaHCO3 | - | - | - | - | - | 23 | - | - |

**Table S7**. Antimicrobial efficacy of dried MOH surgical mask material (whole and middle layer) loaded with the saline solutions (30% OSS or 30% OSS+10% NaHCO3) at 24 hours soaking time.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Saline solutions | Mean Zone of Inhibition (mm) | | | | | | | |
| E. coli | *P. aeruginosa* | P. vulgaris | *S. typhi* | *S. aureus* | Oral Microbiome | *Penicillium* spp | Rhizopus  spp |
| Whole mask material | | | | | | | | |
| 30% OSS | - | - | - | - | - | - | - | - |
| 30% OSS +10% NaHCO3 | - | - | - | - | - | 15 | - | - |
| Middle layer mask material | | | | | | | | |
| 30% OSS | - | - | - | - | - | - | - | - |
| 30% OSS +10% NaHCO3 | - | - | - | - | - | 14 | - | - |



**Fig. S1.** Antimicrobial activities of powdered salts, NaHCO3 powder and its solutions and the saline solutions.