**Supplementary Information for**

***Curvulariacoatesiae*XK8, a potential** **bioadsorbent material for adsorbing** **Cd(Ⅱ) and Sb(Ⅲ)** **compound pollution: characteristics and effects**

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**Table S1. Soil characteristics of the soil samples .**

|  |  |
| --- | --- |
| pH | Metal content（mg/kg）(mean± SD) |
| Sb | As | Fe | Zn | Pb | Mn | Cd | Cr | Sn | Cu | Ni |
| 6.24±1.32 | 11752.981±176.057 | 2538.965±63.849 | 35760.939±986.685 | 61.749±7.097 | 96.312±4.081 | 24.170±1.1524 | 64.333±5.459 | 110.427±2.948 | 0.000  | 7.954±0.581 | 7.281±1.671 |

**Table S2. The initial concentration of heavy metals in the biosorption system.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Number | Cd(II) | Sb(Ⅲ) | Number | Cd(II) | Sb(Ⅲ) | Number | Cd(II) | Sb(Ⅲ) |
| 1 | 0 | 0 | 8 | 4 | 30 | 14 | 6 | 30 |
| 2 | 2 | 0 | 9 | 4 | 60 | 15 | 6 | 60 |
| 3 | 4 | 0 | 10 | 4 | 100 | 16 | 6 | 100 |
| 4 | 6 | 0 | 11 | 4 | 200 | 17 | 6 | 200 |
| 5 | 8 | 0 | 12 | 4 | 500 | 18 | 6 | 500 |
| 6 | 10 | 0 | 13 | 4 | 1000 | 19 | 6 | 1000 |
| 7 | 16 | 0 |  |  |  |  |  |  |

**Table S3.**Analysis of variance for BBD response surface experiments.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | Sum of squares | *df* | Mean square | *F*-value | *p*-value |
| **Dry weight (Y1)** |
| Model | 0.088  | 4  | 0.022  | 25.51  | < 0.0001  |
| A | 3.60E-04  | 1  | 3.60E-04  | 4.20E-01  | 0.5239  |
| B | 3.23E-03  | 1.00E+00  | 3.23E-03  | 3.75E+00  | 0.0642  |
| C | 0.082  | 1  | 0.082  | 9.48E+01  | < 0.0001  |
| D | 2.62E-03  | 1  | 2.62E-03  | 3.04E+00  | 0.0934  |
| Residual error | 0.022  | 25  | 8.609E-004  |  |  |
| Lack of fit | 0.016  | 20  | 7.790E-004  | 0.66  | 0.7735  |
| Pure error | 5.944E-003  | 5  | 1.189E-003  |  |  |
| Cor. total | 0.11  | 29  |  |  |  |
| *R2* = 0.8032; *R2*adj = 0.7717 |
| **pH (Y2)** |
| Model | 19.32  | 14  | 1.38  | 51.73  | < 0.0001  |
| A | 1.41E-03  | 1.00E+00  | 1.41E-03  | 0.053  | 0.8214  |
| B | 4.00E-01  | 1.00E+00  | 4.00E-01  | 14.85  | 0.0016  |
| C | 0.27  | 1  | 2.70E-01  | 10.12  | 6.20E-03  |
| D | 11.12  | 1.00E+00  | 1.11E+01  | 416.79  | < 0.0001  |
| AB | 3.60E-03  | 1  | 3.60E-03  | 0.13  | 0.7185  |
| AC | 0.024  | 1  | 0.024  | 0.9  | 0.3576  |
| AD | 0.084  | 1  | 0.084  | 3.15  | 0.0961  |
| BC | 0.026  | 1  | 0.026  | 0.96  | 0.3428  |
| BD | 0.078  | 1  | 0.078  | 2.94  | 0.107  |
| CD | 0.15  | 1  | 0.15  | 5.56  | 0.0324  |
| A^2 | 0.019  | 1  | 0.019  | 0.72  | 0.4095  |
| B^2 | 4.76E-06  | 1  | 4.76E-06  | 1.79E-04  | 0.9895  |
| C^2 | 0.26  | 1  | 0.26  | 9.61  | 0.0073  |
| D^2 | 6.75  | 1  | 6.75  | 253.03  | < 0.00  |
| Residual error | 0.4  | 15  | 0.027  |  |  |
| Lack of fit | 0.36  | 10  | 0.036  | 4.48  | 0.0557  |
| Pure error | 0.04  | 5  | 8.03E-03  |  |  |
| Cor. total | 19.72  | 29  |  |  |  |
| *R2* = 0.9797; *R2*adj = 0.9608 |
| **Cd(Ⅱ) remove rate (Y3)** |
| Model | 18567.16 | 14 | 1326.23 | 40.48 | < 0.0001 |
| A | 4.35E+01 | 1.00E+00 | 4.35E+01 | 1.33 | 0.2673 |
| B | 1.91E+01 | 1.00E+00 | 1.91E+01 | 0.58 | 0.4565 |
| C | 1527.54 | 1 | 1.53E+03 | 46.62 | < 0.0001 |
| D | 9354.76 | 1.00E+00 | 9.35E+03 | 285.53 | < 0.0001 |
| AB | 4.91E+00 | 1 | 4.91E+00 | 0.15 | 0.7042 |
| AC | 82.97 | 1 | 82.97 | 2.53 | 0.1324 |
| AD | 62.83 | 1 | 62.83 | 1.92 | 0.1864 |
| BC | 86.77 | 1 | 86.77 | 2.65 | 0.1245 |
| BD | 19.3 | 1 | 19.3 | 0.59 | 0.4547 |
| CD | 172.68 | 1 | 172.68 | 5.27 | 0.0365 |
| A^2 | 51.52 | 1 | 51.52 | 1.57 | 0.229 |
| B^2 | 1.01E+01 | 1 | 1.01E+01 | 3.10E-01 | 0.5879 |
| C^2 | 1038.36 | 1 | 1038.36 | 31.69 | < 0.0001 |
| D^2 | 6597.9 | 1 | 6597.9 | 201.39 | < 0.0001 |
| Residual error | 491.44 | 15 | 32.76 |  |  |
| Lack of fit | 388.41 | 10 | 38.84 | 1.89 | 0.2509 |
| Pure error | 103.02 | 5 | 20.6 |  |  |
| Cor. total | 19058.59 | 29 |  |  |  |
| *R2*= 0.9742; *R2*adj = 0.9501 |
| **Sb(Ⅲ) remove rate (Y4)** |
| Model | 697.47  | 14  | 49.82  | 3.14  | 0.0177  |
| A | 8.00E-02  | 1.00E+00  | 8.00E-02  | 5.07E-03  | 0.9442  |
| B | 4.34E+00  | 1.00E+00  | 4.34E+00  | 0.27  | 0.6088  |
| C | 15.79  | 1  | 1.58E+01  | 0.99  | 3.35E-01  |
| D | 347.48  | 1.00E+00  | 3.47E+02  | 21.87  | 0.0003  |
| AB | 2.40E-01  | 1  | 2.40E-01  | 0.015  | 0.9035  |
| AC | 2.54  | 1  | 2.54  | 0.16  | 0.6948  |
| AD | 10.17  | 1  | 10.17  | 0.64  | 0.4362  |
| BC | 0.037  | 1  | 0.037  | 2.35E-03  | 0.962  |
| BD | 22.34  | 1  | 22.34  | 1.41  | 0.2542  |
| CD | 5.72  | 1  | 5.72  | 0.36  | 0.5575  |
| A^2 | 7.09  | 1  | 7.09  | 0.45  | 0.5142  |
| B^2 | 8.16E+01  | 1  | 8.16E+01  | 5.13E+00  | 0.0387  |
| C^2 | 37.16  | 1  | 37.16  | 2.34  | 0.147  |
| D^2 | 190.7  | 1  | 190.7  | 12  | 0.0035  |
| Residual error | 238.32  | 15  | 15.89  |  |  |
| Lack of fit | 226.04  | 10  | 22.6  | 9.2  | 0.0122  |
| Pure error | 12.28  | 5.00E+00  | 2.46  |  |  |
| Cor. total | 935.79  | 29  |  |  |  |
| *R2*= 0.7453; *R2*adj = 0.5076 |



**Figure S1**. Growth curve of XK8.



**Figure S2.** Cd(Ⅱ) and Sb(Ⅲ) removal rate by an optimum fungus under various experimental conditions designed by BBD.