Supporting Information

Microbial Degradation of Tannery Chrome-Solid Waste using *Bacillus thuringiensis*: Optimization of Collagen Hydrolysate Extraction via Response Surface Methodology

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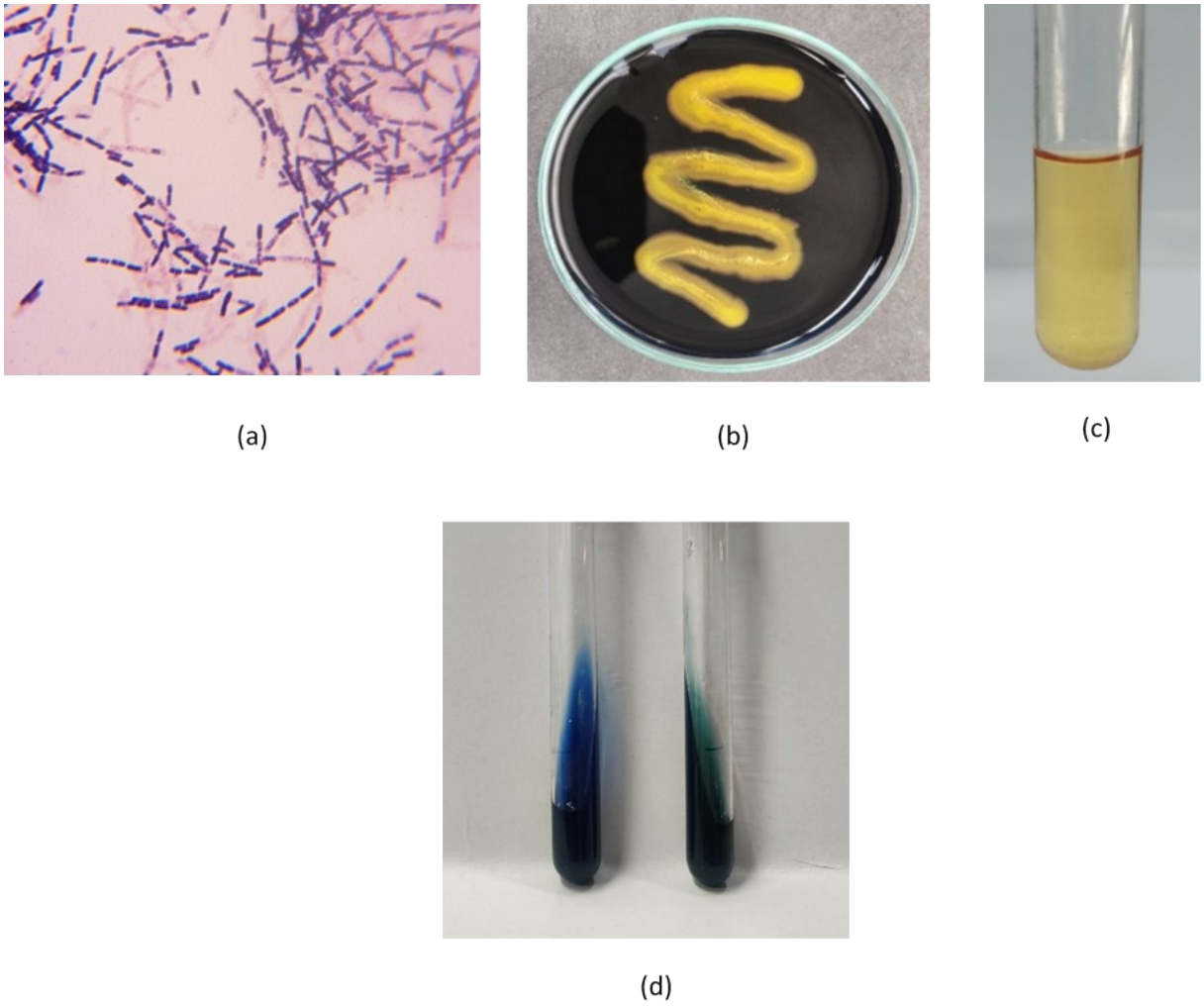

Fig. S1. (a) Gram staining (+) ve, (b) Starch hydrolysis test (-) ve, (c) Urease test (-) ve (d) Simmons citrate test [left: positive, right: control].

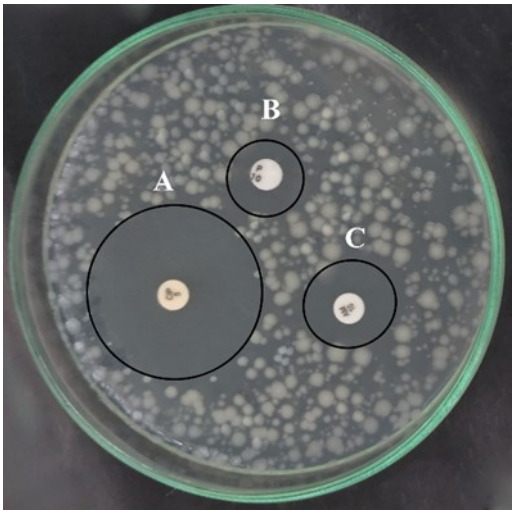

Fig. S2. Antibiotic susceptivity test for ***Bacillus thuringiensis*** SRL4A.

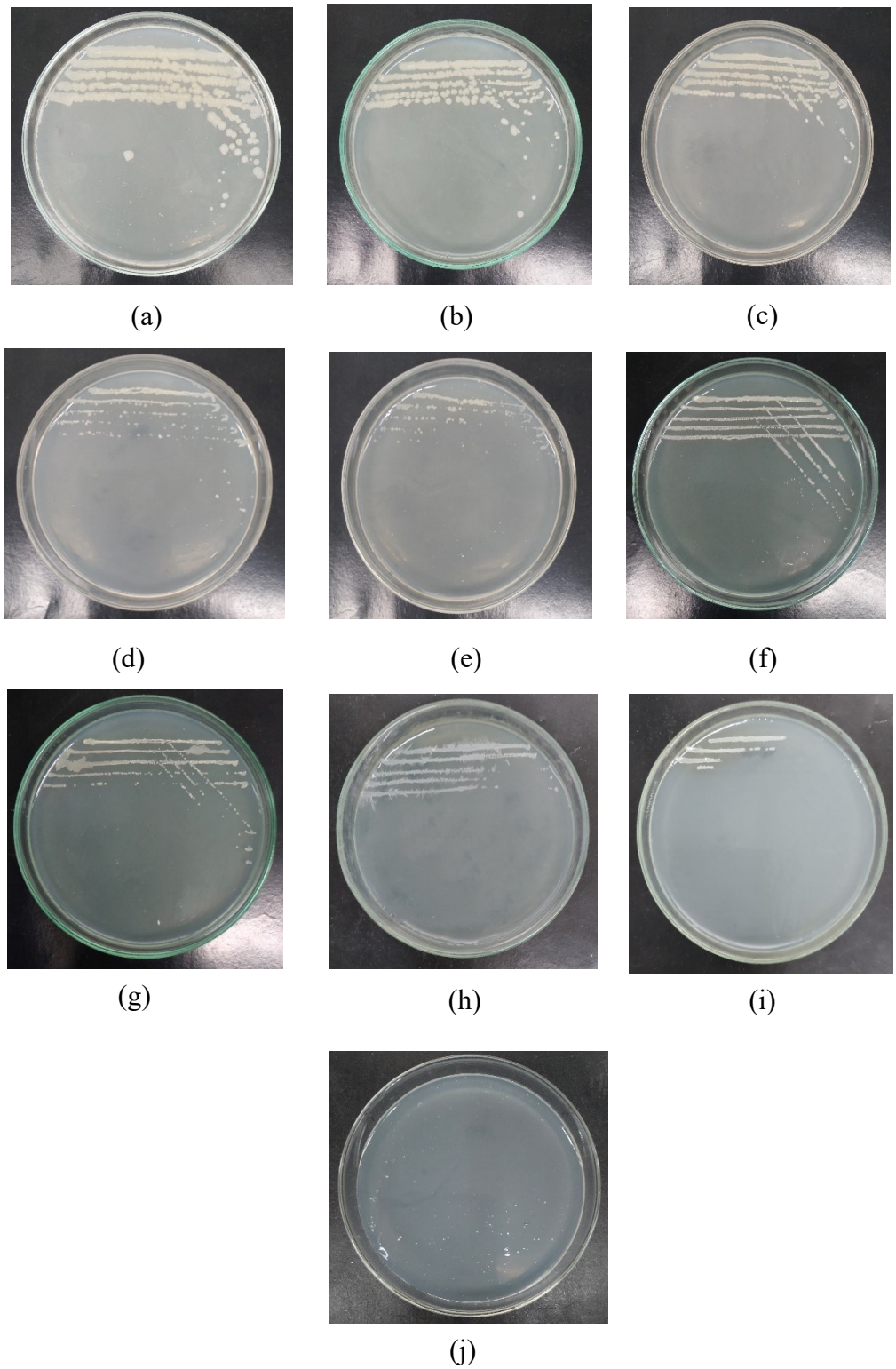

Fig. S3. Growth of ***Bacillus thuringiensis*** SRL4A strain on nutrient agar plate containing (a) 100 ppm, (b) 200 ppm, (c) 300 ppm, (d) 400 ppm, (e) 500 ppm, (f) 600 ppm, (g) 700 ppm, (h) 800 ppm, (i) 900 ppm, and (j) 1000 ppm of chromium.

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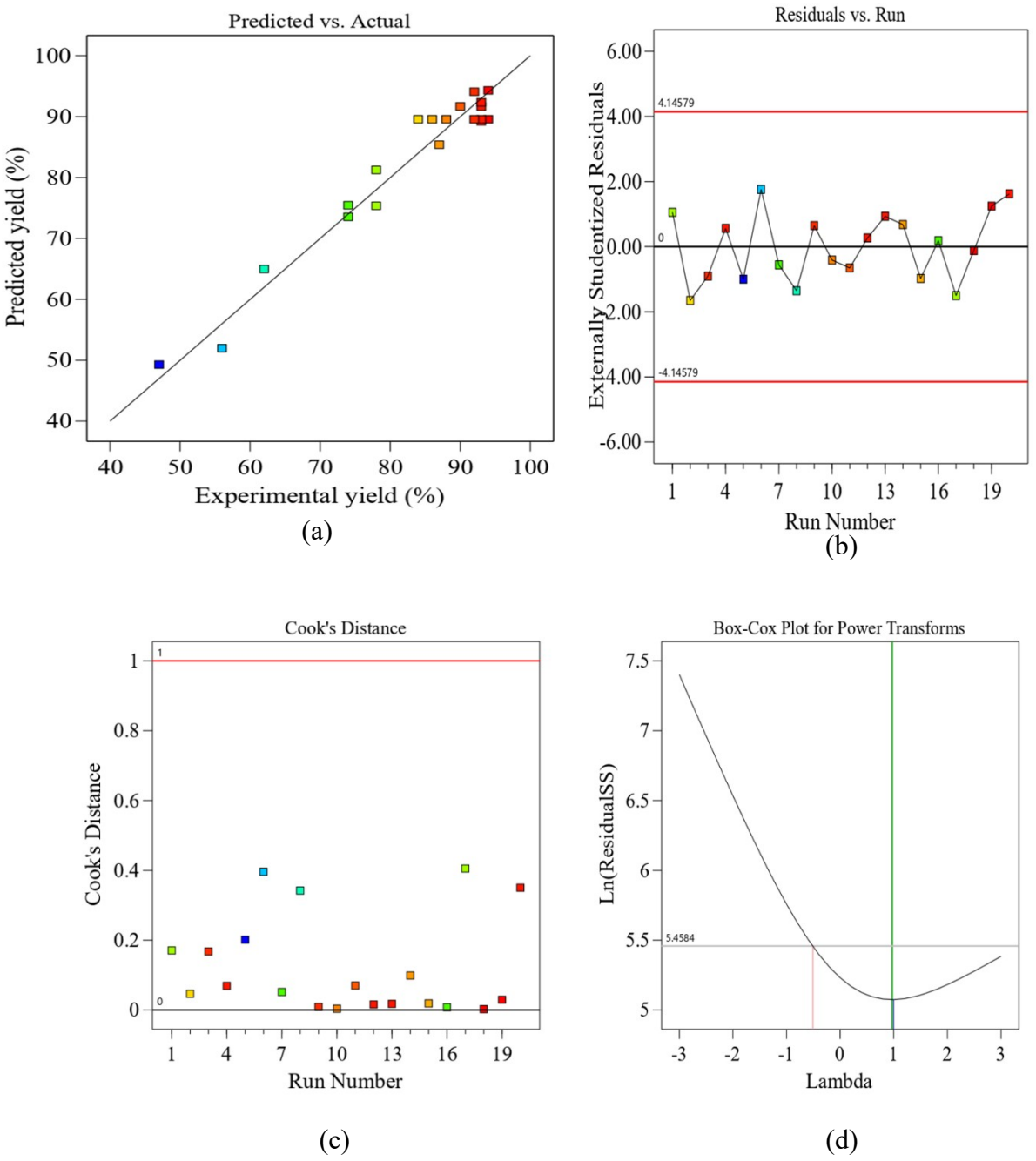

Fig. S4. Predicted vs experimental yield plot (a), plot of residuals vs run (b), Cook's Distance plot (c), and Box-Cox plot for power transforms (d) for the degradation of shaving dust.

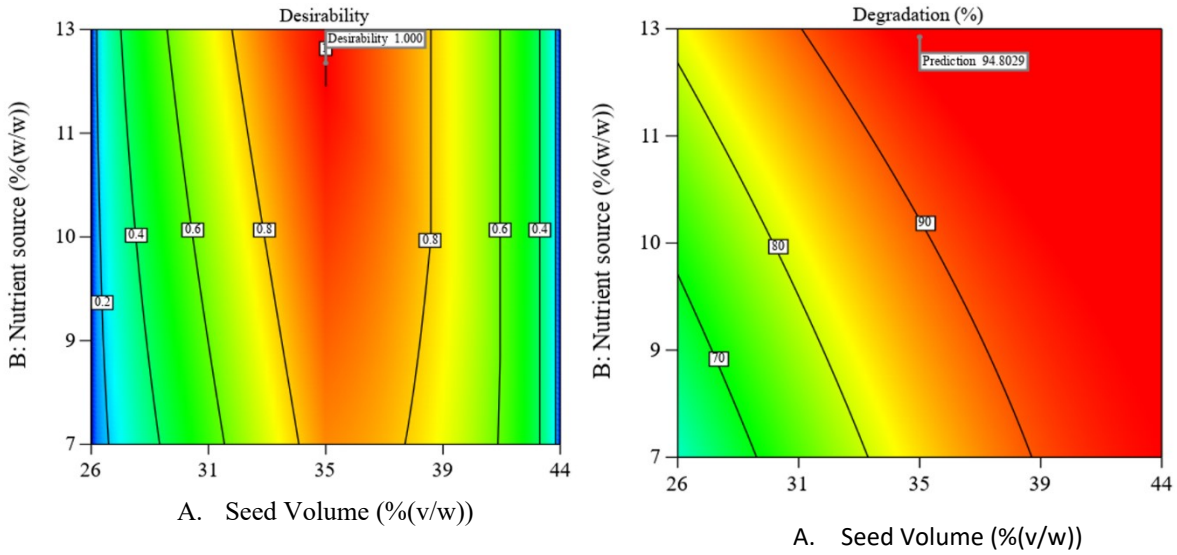

Fig. S5. Desirability plot of seed volume vs nutrient source.

(a) (b) (c)

Fig. S6. Sterilized chrome shaving dust (a), and degradation at (b) 72 hours and (c) 96 hours

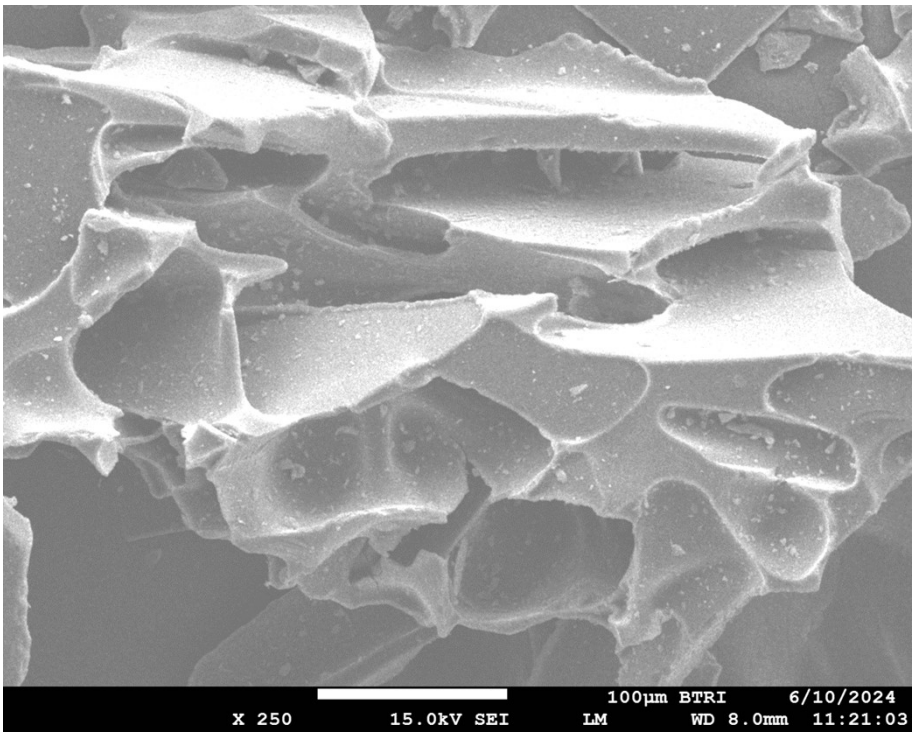

Fig. S7. SEM image of powdered collagen hydrolysate.

Table S1

Morphological characteristics of the bacteria.

Name	Result
Colony characters	Circular, greyish white-slightly yellow, opaque, feathery edge, 2-5 mm in diameter, rough, matted surface with raised elevation.
Gram staining	Positive
Endospore staining	Positive
Motility	Positive

Table S2

Biochemical profile and result of 50CH kit.

No.	Type of carbohydrates	Result	No.	Type of carbohydrates	Result
0	Temoin	-	25	Esculine	+
1	Glycerol	-	26	Salicin	+
2	Erythritol	-	27	Cellobiose	-
3	D-Arabinose	-	28	Maltose	+
4	L-Arabinose	-	29	Lactose	-
5	Ribose	+	30	Melibiose	-
6	D-Xylose	-	31	Sucrose	-
7	L-Xylose	-	32	Trehalose	+
8	Adonithol	-	33	Inulin	-
9	Methyl xyloside	-	34	Melizitose	-
10	Galactose	-	35	D-raffinose	-
11	D-Glucose	+	36	Starch (Amidon)	-
12	D-Fructose	+	37	Glycogen	+
13	D- Mannose	-	38	Xylitol	-
14	Sorbose	-	39	Gentibiose	-
15	Rhamnose	-	40	Turanose	-
16	Dulcitol	-	41	Lyxose	-
17	Inositol	-	42	Tagatose	-
18	Mannitol	-	43	D-fucose	-
19	Sorbitol	-	44	L-fucose	-
20	Methyl-D-mannoside	-	45	D-Arabitol	-
21	Methyl-D-glucoside	-	46	L-Arabitol	-
22	n-acetyl-glucosamine	+	47	Gluconate	-
23	Amygdalin	-	48	2, Keto-gluconate	-

24	Arbutin	-	49	5, Keto-gluconate	-

*"+" sign indicates positive and "-" indicates negative result for the tests.

Table S3

Biochemical profile and results of API 20 E strip.

Name	Result
ONPG	-
ADH	+
LDC	-
ODC	-
Citrate	+
H_2S	-
Urease	-
TDA	-
Indole	-
Voges- Proskauer	+
Gelatin	+
D-glucose	-

Table S4

Antibiotic test results for the isolated strain ***Bacillus thuringiensis*** SRL4A**.**

Name	Zone of Inhibition (mm)	Results
A. Ciprofloxacin (5 µg)	40 ± 1	Susceptible
B. Penicillin (10 µg)	12 ± 2	Resistant
C. Ampicillin (10 µg)	16 ± 1	Resistant