

**Table S1** Color coordinates of bio-dyed silk fabric at selected conditions

<b>Extraction Conditions</b>	<b>Radiation Time</b>	<b><i>L</i>*</b>	<b><i>a</i>*</b>	<b><i>b</i>*</b>
<b>Aqueous</b>				
NRE/NRS	0 min.	65.33	4.49	21.05
RE/RS	6 min.	55.44	5.73	23.55
<b>Acidic</b>				
NRE/NRS	0 min.	56.80	8.60	26.09
RE/RS	6 min.	54.31	8.80	28.36

RE= irradiated extract; RS= irradiated silk; NRE= un-irradiated extract NRS = un- irradiated silk

**Table S2** Trials for experiments under central composite design through response surface methodology

Exp. No	(pH)	volume (mL)	Time (min)	Temperature (°C)	Salt (g/100 mL)	Color strength(K/S)
1	4	35	35	85	1	3.7987
2	6	35	35	65	1	3.9675
3	4	55	35	65	1	5.0265
4	6	55	35	85	1	4.2137
5	4	35	35	65	2	4.1595
6	6	35	35	85	2	3.4552
7	4	55	35	85	2	4.5947
8	6	55	35	65	2	3.7878
<b>9</b>	<b>4</b>	<b>35</b>	<b>55</b>	<b>65</b>	<b>1</b>	<b>12.253</b>
10	6	35	55	85	1	4.0381
11	4	55	55	85	1	5.1605
12	6	55	55	65	1	4.2484
13	4	35	55	85	2	4.1812
14	6	35	55	65	2	4.2929
15	4	55	55	65	2	4.8951
16	6	55	55	85	2	4.8568
17	3	45	45	75	1.5	5.3280
18	7	45	45	75	1.5	3.6418
19	5	25	45	75	1.5	3.4151
20	5	65	45	75	1.5	5.0040
21	5	45	45	75	0.5	7.3245
22	5	45	45	75	2.5	7.3702
23	5	45	25	75	1.5	6.5241
24	5	45	65	75	1.5	6.6977
25	5	45	45	55	1.5	8.1608
26	5	45	45	95	1.5	7.6601

27	5	45	45	75	1.5	7.5134
28	5	45	45	75	1.5	6.9805
29	5	45	45	75	1.5	7.3569
30	5	45	45	75	1.5	5.6880
31	5	45	45	75	1.5	7.8816
32	5	45	45	75	1.5	5.7593

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**Table S3** Response Surface Regression: K/S Versus *pH*, Volume, Time, Temperature & Salt using acidic extract.

Source	DF	Adj S.S.	Adj MS	F-Value	P-Value
Model	18	106.483	5.9157	20.45	0.000
Linear	5	26.232	5.2464	18.14	0.000
<i>pH</i>	1	22.648	22.6483	78.30	0.000
Volume	1	2.638	2.6378	9.12	0.013
Time	1	0.216	0.2157	0.75	0.408
Temperature	1	0.010	0.0099	0.03	0.857
Salt	1	0.006	0.0061	0.02	0.888
Square	5	38.246	7.6493	26.44	0.000
<i>PH*PH</i>	1	19.745	19.7455	68.26	0.000
Volume*Volume	1	14.374	14.3735	49.69	0.000
Time*Time	1	0.493	0.4934	1.71	0.221
Temperature *	1	0.939	0.9394	3.25	0.102
Temperature					
Salt*salt	1	0.060	0.0600	0.21	0.659
2-Way	8	47.085	5.8856	20.35	0.000
Interaction					
<i>pH* Volume</i>	1	0.371	0.3712	1.28	0.284
<i>pH* time</i>	1	0.180	0.1802	0.62	0.448
<i>volume* time</i>	1	13.747	13.7472	47.53	0.000
Volume*	1	17.660	17.6600	61.05	0.000
Temperature					
Volume * salt	1	13.107	13.1069	45.31	0.000
Time *	1	11.726	11.7265	40.54	0.000
temperature					
Time * salt	1	11.561	11.5608	39.97	0.000
Temperature*	1	14.400	14.4001	49.78	0.000
salt					

Error	10	2.893	0.2893	-----	-----
Lack-of-Fit	6	0.233	0.0388	0.06	0.998
Pure Error	4	2.660	0.6649	---	-----
Total	28	109.376	-----	----	-----

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