



The Fermented Conditions of the Weed-Extracts for the Inhibition of Tyrosinase

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INTRODUCTION

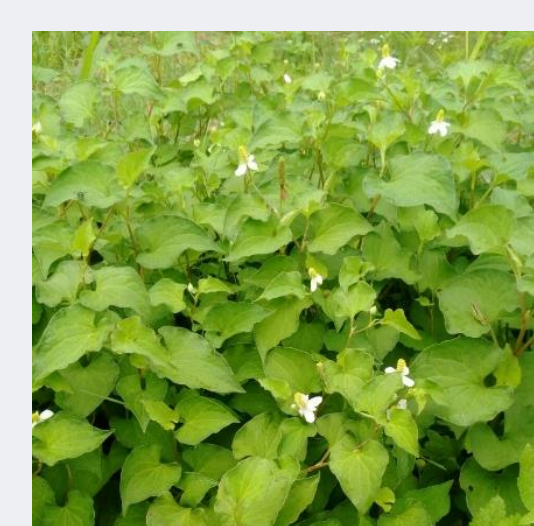
In this study, a series of studies were carried out from common wild plants through three different temperature water extraction methods. Six weeds were discovered from the natural farm of Nanhua University for the study on the inhibition rate of tyrosinase, Taguchi methods evaluation fermented condition. The applications of weeds can be a useful biomaterial for further application.

MATERIALS AND METHODS

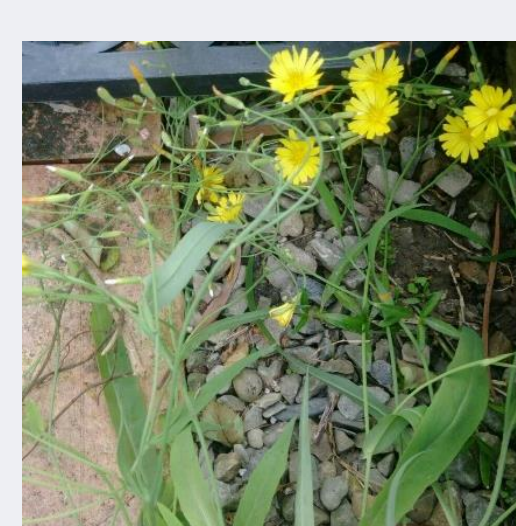
After using the illustrated handbook to identify the characteristics, we go on to pick up weeds.

Different temperature (25°C, 60°C, 100°C) extracts of a weed

1. Tyrosinase inhibition
2. Taguchi methods evaluation fermented condition



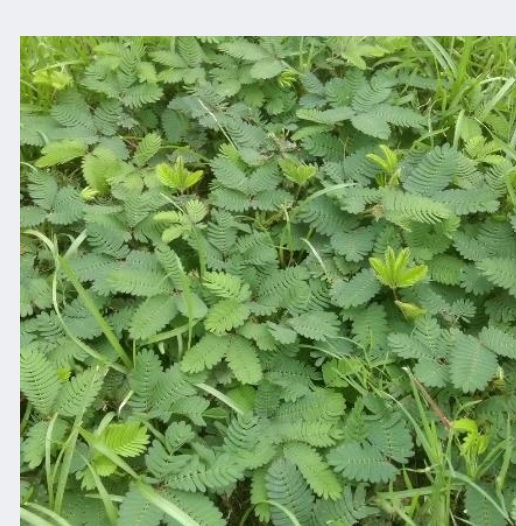
Houttuynia cordata Thunb.



Lxeris chinensis Thunb.



Bidens pilosa var. radiata



Mimosa pudica Linn.



Ageratum houstonianum Mill.



Eleusine indica (L.) Gaertn.

RESULTS

Tyrosinase inhibition (%)

Table 1. Weed with the best tyrosinase inhibition

weeds	code	Tyrosinase inhibition (%)	Extraction temperature (°C)
<i>Mimosa pudica</i> Linn.	MI	74.5 ± 0.6%	25°C
<i>Bidens pilosa</i> Linn..	BI	74.7 ± 1.1%	60°C
<i>Houttuynia cordata</i> Thunb	HO	76.6 ± 2.2%	25°C
<i>Eleusine indica</i> (L.) Gaertn	EI	73.8 ± 0.6%	25°C
<i>Lxeris chinensis</i> Thunb.	IX	72.6 ± 0.6%	100°C
<i>Ageratum houstonianum</i> Mill.	AG	72.3 ± 0.4%	60°C

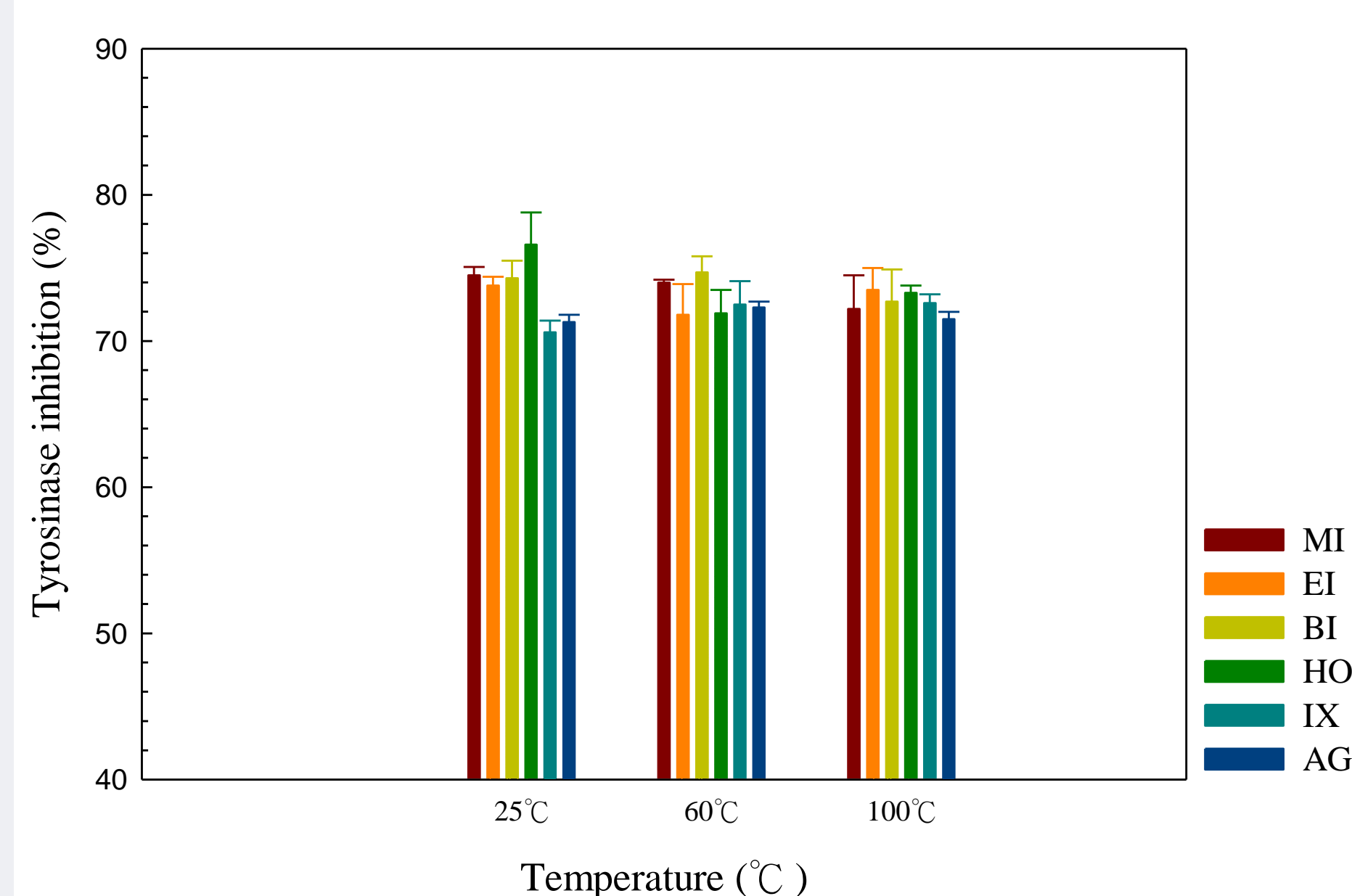


Figure1. Weeds with the best tyrosinase inhibition at different temperatures

Taguchi methods evaluation fermented condition

Table 2. *Mimosa pudica* Linn. tyrosinase inhibition S/N Ratios

Level	Sample condition	RPM	Times (day)	Temperature (°C)	Bacterial concentration (mg/L)	Culture (BCRC)	pH value	Medium
1	27.97	29.48	24.02	23.17	29.48	29.99	30.19	29.73
2	35.47	30.35	34.93	36.09	30.01	35.56	35.75	29.81
3		35.33	36.21	35.89	35.66	29.61	29.22	35.61
Effect	7.5	5.85	12.19	12.92	6.17	5.95	6.53	5.88
order	3	8	2	1	5	6	4	7

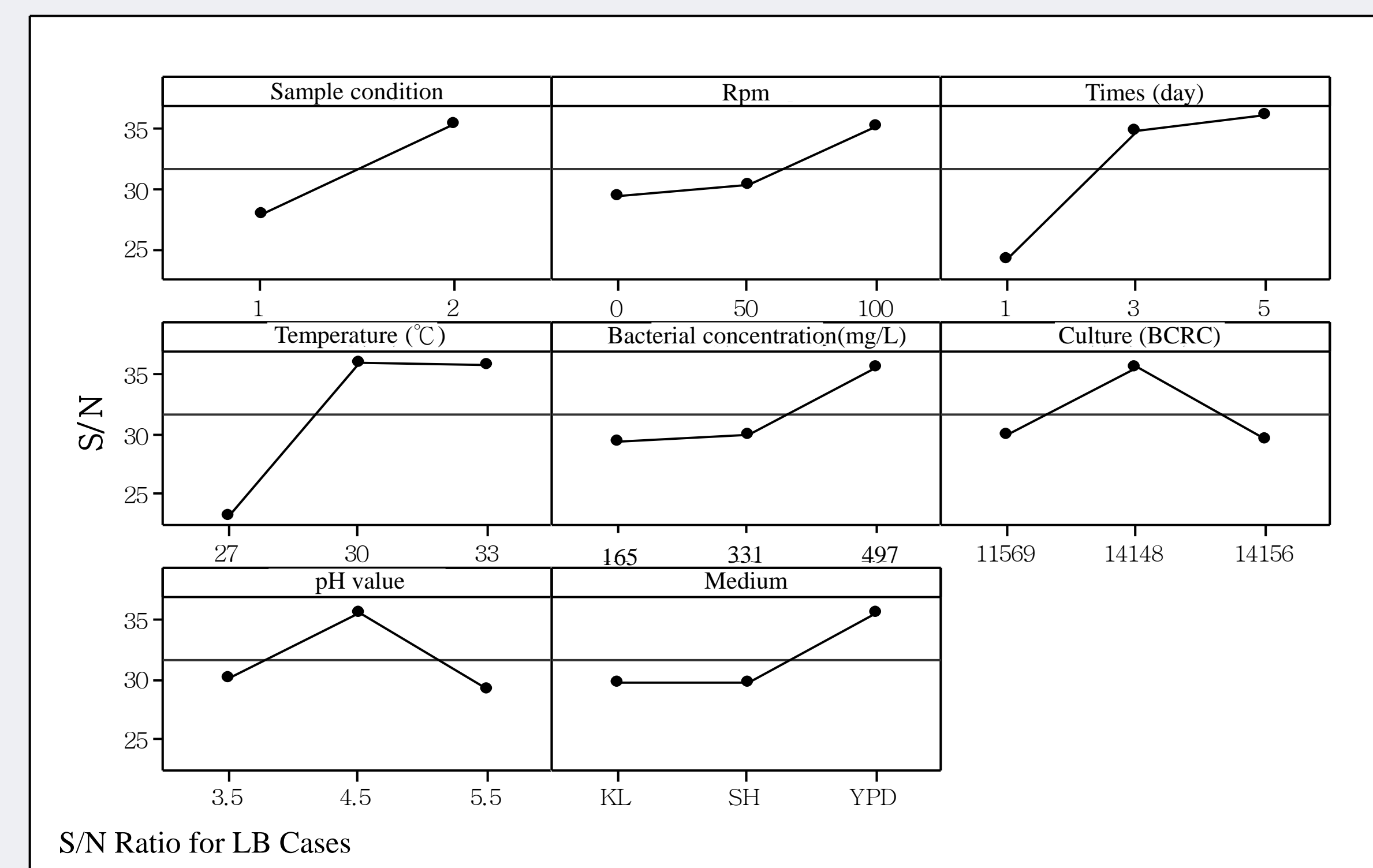


Figure2. *Mimosa pudica* Linn. tyrosinase inhibition response graph

Table 3. *Mimosa pudica* Linn. tyrosinase inhibition confirmation experiments

confirmation experiments before								
sample condition	RPM	Times (day)	temperature (°C)	Bacterial concentration (mg/L)	culture (BCRC)	pH value	Medium	tyrosinase inhibition (%)
liquid	100	5	30	497	14148	4.5	YPD	66.0
confirmation experiments after								
liquid	100	4.5	30	497	14148	4.5	YPD	63.3
liquid	100	5.5	30	497	14148	4.5	YPD	66.4
liquid	100	5	28	497	14148	4.5	YPD	63.6
liquid	100	5	32	497	14148	4.5	YPD	64.9

Mimosa pudica Linn. fermented Comparison

Table 4. The difference of antioxidant and inhibition rate of tyrosinase of *Mimosa pudica* Linn. after fermentation with *Acetobacteraceae*.

methods	fermented before	fermented after
tyrosinase inhibition (%)	72.2 ± 2.3	66.4 ± 0.3

CONCLUSIONS

1. The weeds are extracted by room temperature (25°C) will have the best tyrosinase inhibition.
2. The results showed that the most obvious factors affecting inhibition of the tyrosinase experiment were culture days and temperature.
3. Sample condition liquid; rpm 100 rpm; culture times 5.5 days; temperature 30°C; Bacterial concentration 497 mg/L; pH value 4.5 for YPD Medium is the best fermented condition for tyrosinase inhibition.

REFERENCES and ACKNOWLEDGEMENT

- Chan, C.-F., Huang, C.-C., Lee, M.-Y., & Lin, Y.-S. (2014). Fermented broth in tyrosinase and melanogenesis inhibition. *Molecules*, 19(9), 13122-13135.
- Kennedy, D. O., & Wightman, E. L. (2011). Herbal extracts and phytochemicals: plant secondary metabolites and the enhancement of human brain function. *Advances in Nutrition*, 2(1), 32-50.
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