

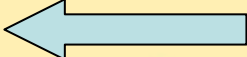
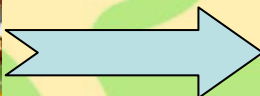


# Acids Content Variations in Sea Buckthorn Wine Production

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# Production Technical Procedure (1)

sea buckthorn juice → centrifugalization →  
clear juice(measuring total acid, Brix scale ,  
pH) → acid reduction by  $\text{CaCO}_3$ , adjust pH) →  
quiescence and crystallization below  $5^\circ\text{C}$  24  
hours → Separation → application of  
pectinase enzyme → filtration by diatomite →

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## Production Technical Procedure (2)

pasteurize (75°C 30min) → cooling → add yeast → adjusting sugar → primary fermentation → secondary fermentation (add lactobacillus) → brewing → blending → sterilization → bottling → final product

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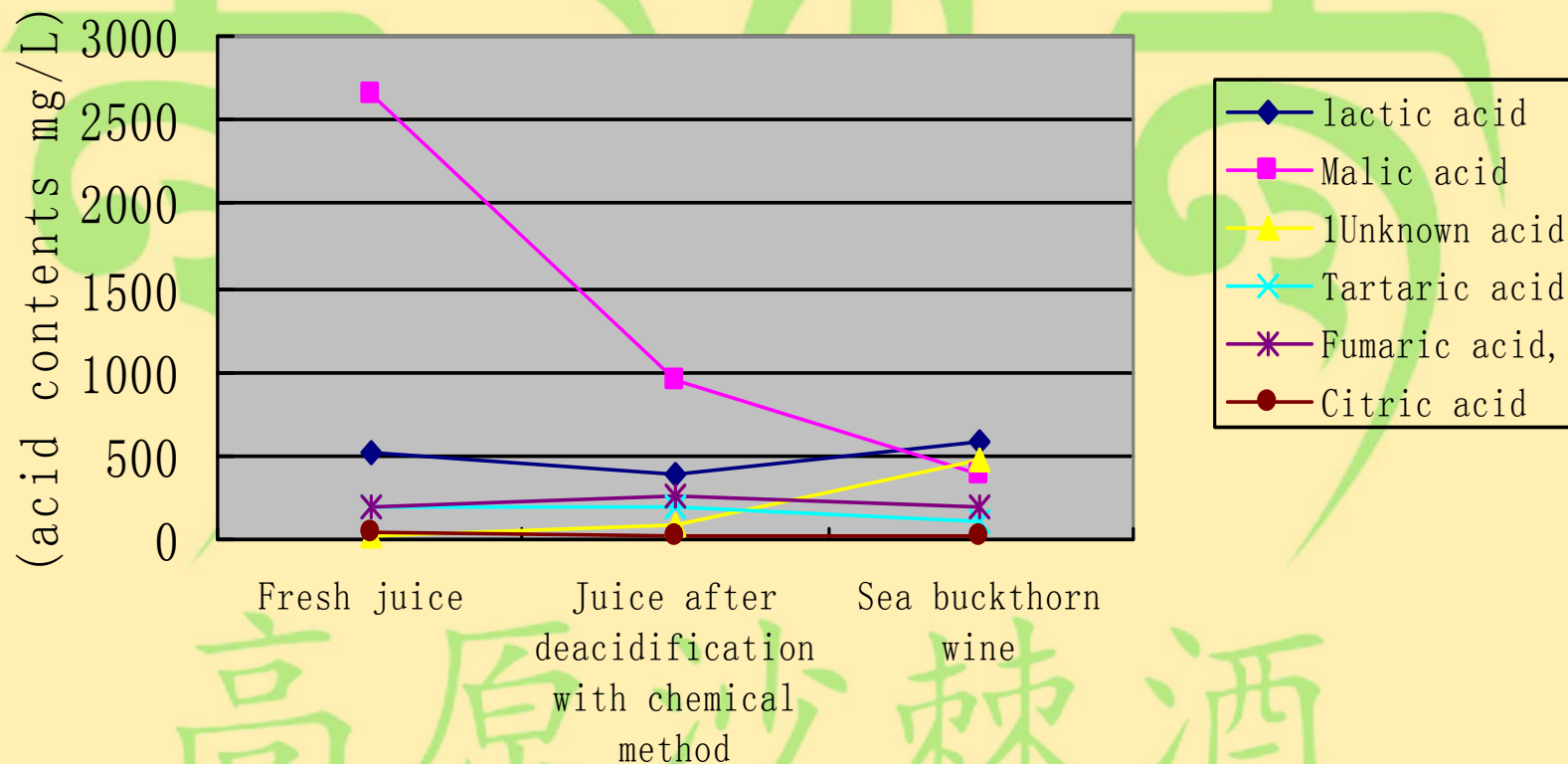
**Table 1 -Variations of Acid contents in the Production Process of Sea Buckthorn Wine**

<b>Organic acids</b>	<b>Fresh juice</b>	<b>After chemical deacidification</b>	<b>Sea buckthorn wine</b>
<b>Lactic acid</b>	508.1354	397.9334	591.1895
<b>Malic acid</b>	2647.9850	954.2454	379.6214
<b>1Unknown acid</b>	32.0506	96.9103	484.4095
<b>Tartaric acid</b>	201.3427	204.9500	101.1879
<b>Fumaric acid</b>	187.2356	266.9330	196.9298
<b>Citric acid</b>	41.4971	27.0556	17.8522





# Chart 1 - Ion chromatogram of the Variations in Contents of Organic Acids in the Production Process of Sea Buckthorn Wine





## Table 2 - Physiochemical Indexes in Sea Buckthorn Wine

Index	Dry wine	Semi-dry wine
Alcohol Content (20°C, %)	$\geq 12$	$\geq 10$
Reducing Sugar (g/L)	$\leq 4$	4-12
Total Sugar (g/L)	$\geq 8$	$\geq 8$
V-C (mg/L)	$\geq 50$	$\geq 50$

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# Safety and Hygienic Index

Content of  $\text{SO}_2 \leq 0.05\text{g/L}$

Content of Pb  $\leq 0.2\text{mg/L}$

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# Microbiological index

Total bacteria count  $\leq 60$  /ml

Coliform bacteria  $\leq 1$  /ml

Pathogenic bacteria: not to be detected

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# Conclusions

Our study shows that by way of chemical deacidification, the acid content of the sea buckthorn juice can be brought down to a level to meet the requirements for proper fermentation. Following acid reduction the fermentation process can be completed normally, and therefore a qualified product can be obtained that meets all the quality and technical standards.





# Discussions (1)

The acid content in the sea buckthorn juice is a major factor that affects its fermentation and affects the quality of the final product. Therefore, the deacidification process is a key step in the production procedure. The fresh sea buckthorn juice contains a high level of malic acid, and comparatively lower levels of lactic acid, tartaric acid, fumaric acid, and citric acid. The chemical deacidification markedly reduces the malic acid content. This reduction accounts for the main part of acid content reduction in the juice. When properly deacidified, the sea buckthorn juice has the properties to be normally fermented, and to produce an up-to-grade product that meets all sensory, physiochemical, and hygienic standards.





## Discussions (2)

It can be derived, from the analytical chart of the ion chromatogram on the variation of organic acids during the production of sea buckthorn wine, that the content of one unknown acid goes up markedly following the fermentation of the juice. Our testing conditions have yet limited us from detecting the type of this acid, which will need to be further studied





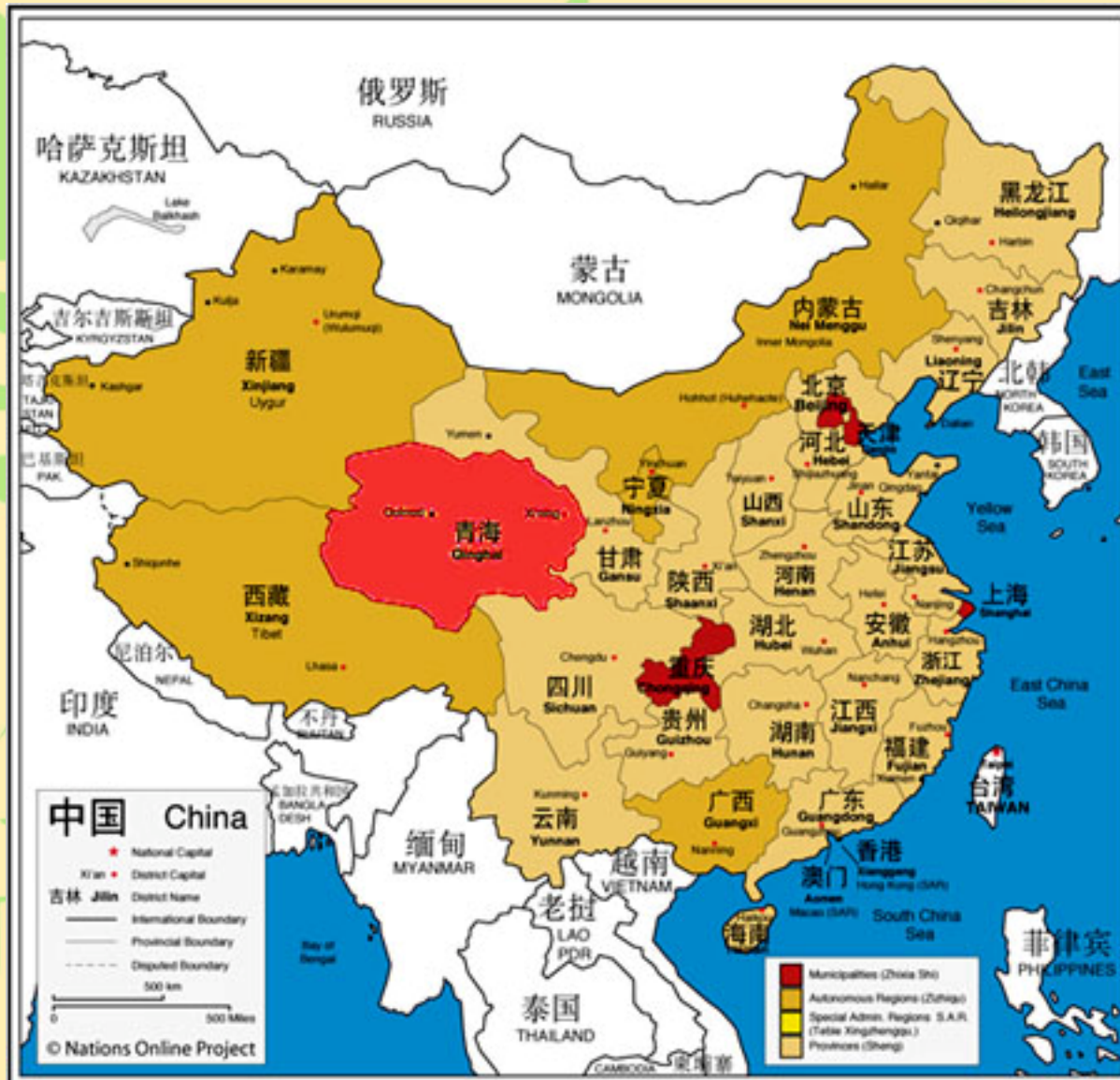
## Discussions (3)

What mainly happens in the chemical deacidification process, in the production of the sea buckthorn wine, is that the tartaric acid transforms into an insoluble hydrogen tartrate, or that the tartaric acid together with the hydrogen tartrate forms a neutral calcium tartrate, thereby reducing the acidity levels. However, in our tests, the largest portion of acid reduction is found in the reduction of the malic acid. The principles by which this deacidification method works remain a subject for further studies





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