

Fig. 1 Amount of total ester in different liquor samples.

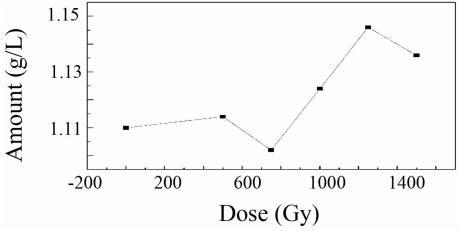


Fig. 2 Amount of total acid in different liquor samples.

Overall changes of esters and acids in control and irradiated samples are shown in Figs. 1 and 2. As we can see in Fig. 1, along with the increase of the irradiation dose, total ester content in the liquor shows an overall downward trend. When the irradiation dose comes 1000 Gy, the total ester content have a minimum value 3.694 g/L which means an 17% decline compared with control. In Fig. 2, total acid content in the liquor shows upward trend with increasing of irradiation dose. When irradiation dose comes 1250 Gy, the total acid content reached the maximum value 1.146 g/L which means an 3% increase compared to the control. In a conclusion, electron beam can degrade esters in liquor. Meanwhile, esters were decomposition into alcohols and acids, and the acids were reduced to aldehydes. So compared to the rise of total acid esters degradation is even more apparently.

3 - 60 Effect of Electron Beam Irradiation on Aging of Liquor

Zhang Miaomiao, Lu Dong and Li Wenjian

Different dosages of electron beam were irradiated liquor samples to study the improvement of aging effects. Both Light-flavor liquor and Luzhou-flavor liquor were irradiated by electron beam(1.5 MeV/u) with the dosages of 500, 750, 1000, 1250, 1500 Gy respectively. Control and irradiation liquor samples were scanned the UV spectra between 200 to 400 nm. Figs. 1 and 2 are Luzhou-flavor liquor 1573 and Light-flavor liquor Jinkang sweet sorghum UV spectra respectively.

As shown in Fig. 1, the spectrum curve changes between 260 nm to 280 nm of control and irradiated samples are significant. Different from control, there are two peaks in irradiated samples at 267 nm, 272 nm and a trough at 270 nm. From 280 to 300 nm, with the irradiation dosages were gradually increased from 0 to 1500 Gy, Luzhou-flavor liquor 1573 has an absorbance value downward trend. That shows good effect of liquor aging^[1-2].

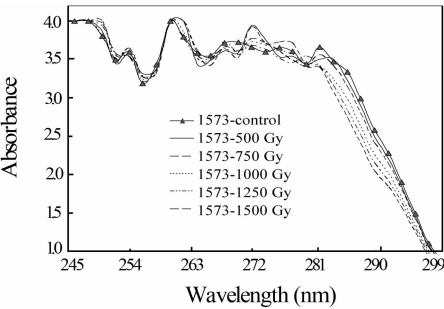


Fig. 1 The UV spectra of Luzhou-flavor liquor 1573.

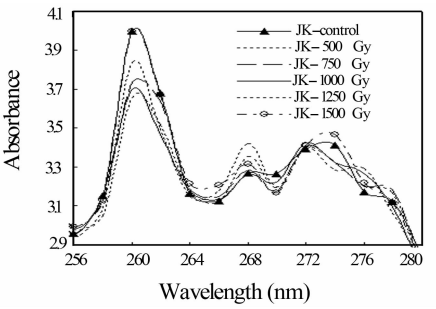


Fig. 2 The UV spectra of Light-flavor liquor Jinkang.

As shown in Fig. 2, Jinkang sweet sorghum liquor JKvalues was declining from 256 to 264 nm with the irradiation dosages were gradually increased from 500 to 1250 Gy. That shows aging trend of liquor. At dosage of 1500 Gy, the irradiated sample has the same spectral curve as control which means the retrogradation of liquor aging phenomena. From 264 to 280 nm, there are two peaks at 268 nm and 273 nm in

control and irradiated samples which show no absorbance change rules. But at 273 nm, blue shift in irradiated samples are observed from 500 to 1250 Gy, which may related to the degree of materials association in the liquor aging process^[3].

References

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[3] Yang Tao, Li Gouyuo, Zhuang Mingyang, Sichuan Food and Fermentation(in Chinese), 44, 4(2008)6.

3 - 61 Study on UV-visible Absorption Spectrum of Different Years Liquor

Zhang Miaomiao, Lu Dong, Cao Guozhen and Li Wenjian

We have scanned different years liquor in 200~400 nm spectral curve by spectrophotometer. According to the UV-visible absorption spectra, we chosen 280~300 nm absorption to analysis curve similarity. Similarity results shows in Table. 1. The highest similarity value (0.966) comes from one year and 8 years liquor, which means one year liquor's style is similar to 8 years liquor.

Compared with one year and 6 years liquor, the lowest value (0.814) comes, which means the great difference between these two samples. Other years liquor were follow the same regulation.

Table 1	The similarities of different years liquor				
Similarity	1	2	4	6	8
1	1	0.916	0.864	0.814	0.966
2		1	0.948	0.896	0.948
4			1	0.948	0.895
6				1	0.844
8					1

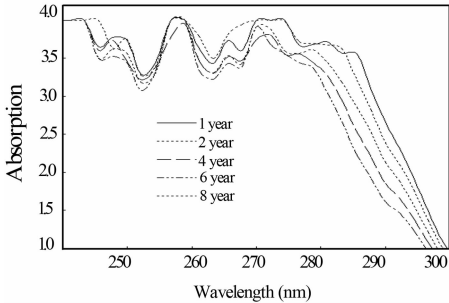


Fig. 1 The UV spectrum of different years liquor.

As shown in Fig. 1, the UV spectra absorption value of samples from 1, 2, 4, 6, 8 years liquor were remarkable. And there are four peaks and three troughs at a specific wavelength. Compared with one year and 8 years samples, there are two peaks in 250 and 270 nm. After natural aging process, the carboxyl portions of the acids in 8 years liquor were undergoing substitution reactions. These reactions induced a red shift from 230 nm peak. In 280~300 nm, 1, 2, 4, 6, 8 years liquor samples tend to be stable. Except to 8 years sample, the absorption value of other samples were gradually depressed. This may be because with increasing of storage years, the physical and chemical reactions speed in liquor was slows down. In spectral absorption value, this phenomenon means decrease in absorption value.