Electrochemistry Behavior of Hydroxyethylrutin and its Analytical Application*

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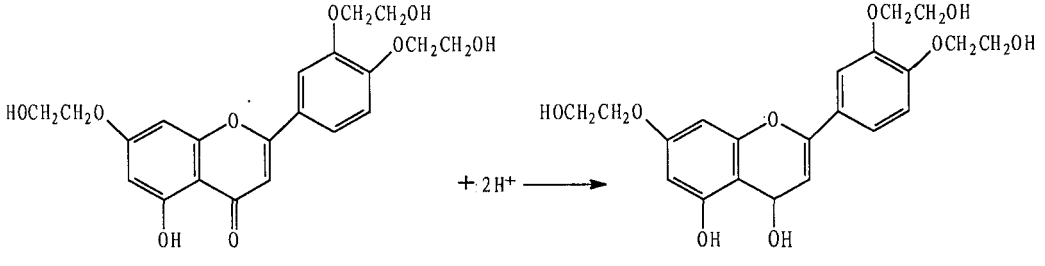
Hydroxyethylrutin is also called Venoruton, abbreviated as HER, it has been used for curation of arteriosclerosis, heart disease etc. The determination method of HER is few[1], the determination of HER by electrochemistry method has not been reported.

In this paper, the polargraphic and Voltammetric behavior of HER were studied in detail, the measurement were based on Cyclovoltammetry(CV), Linear scan voltammetry(LSV) and differential pulse polarography(NPP). There were an good peaks in HAc-NaAc buffer(PH=5.6) at potential -1.40V(vs.SCE), the current of peak shows a good linear relationship with HER concentration in range of $1\times10^{-4}\sim5\times10^{-5}$mol/L.The properties of peak can be suggested by experimental results that: (1) the electrocapillary curve of HER was lower than that of buffer solution., it meant that HER was absorbed on the surface of the mercury electrode;(2)as a function of temperature, peak current became smaller when temperature raised from 7 to 20 ℃.That is, the temperature coefficient is negative. It revealed that absorption was involved in the electrode process; (3) the peak current is proportional to scan rate; (4) repetitive cyclic voltammogram on PAR 303 static mercury electrode did not produce any oxidation peak and the reduction peak current of the following cycles was lower than the former one. It indicated the reduction of HER was irreversible and showed absorption characteristics.

According formula[2],we calculated the numbers of electrons transferred were n=2 and considering its structure, the mechanism of reduction of HER on mercury electrode can be proposed as follows:



The linear relationship between peak current and HER concentration has been applied to determination of the content of HER in Venoruton tablet, compared with the results of pharmacopoeia method[3], the results is satisfying.

Reference

1 Yang Y.. Fenxi Huaxue,1996,**24**(2):261
2 Anson F., translated by Huang W., et al. Electrochem and Electroanalytical Chem., Beijing Univ. Press, 1983, pp37.
3 The pharmacopoeia of people's republic of China(Second section), Guangzhou Science and Technology Press,1995.

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