


MOŽNOSTI UPORABE REDOKS POTENCIALA V TEHNOLOGIJI PREDELAVE VINA

Marin Berovič

A painting of a snowy village scene. The scene is dominated by a large church with a tall, pointed spire, situated on a hill. The church has a light-colored facade and a dark roof. The surrounding buildings are smaller, with dark roofs and light-colored walls. The ground is covered in snow, and there are bare trees in the foreground. The sky is a mix of white and grey, suggesting a cloudy day. The overall tone is cold and wintry.

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REDOKS POTENCIAL

$$E = E_{\text{calomel}} + \frac{RT}{nF} \ln a_{\text{oxidantov}} / a_{\text{reducentov}}$$

$$E_{\text{calomel}} = 244 \text{ mV } E_0$$

Standardni redoks potencial

$$E_h = E_0 + \frac{RT}{nF} \ln a_{\text{oxidantov}} / a_{\text{reducentov}}$$

Clarkova definicija rH potenciala

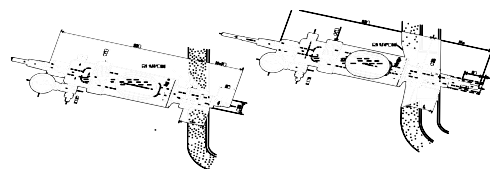
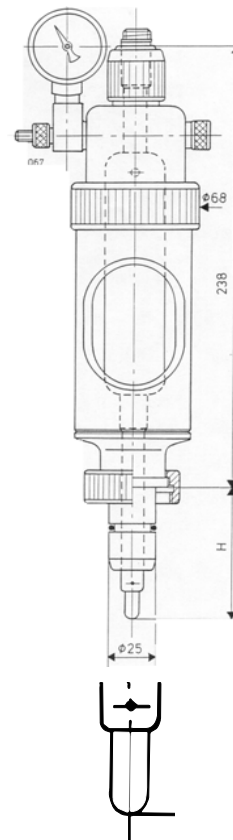
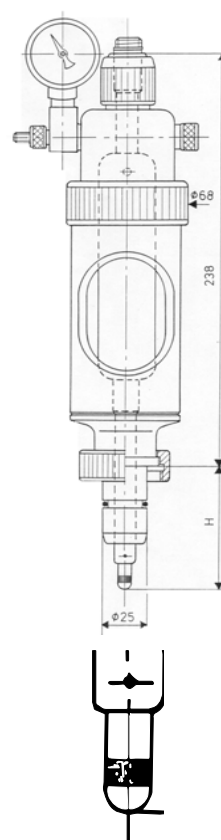
$$rH = 0.0343 E_h + 2 \text{ pH} ; rH = - \log p\text{H}_2 ; \text{pH} = - \log a\text{H}_2$$

Redoks elektroda

pH elektroda

Pt / kalomel

Steklena/kalomel



REDOKS POTENCIAL V VINIH

Redoks potencial v vinih odraža hitrost in intenzivnost vsote vseh oksido redukcijskih procesov

Vino predstavlja kompleksen oksido redukcijski potencial sestavljen iz :

→ **kemijskih oksido redukcijskih komponent :**

alkoholi, aldehidi, organske kisline (okso in keto), polifenoli, kinoni, askorbinska kislina, dehidroaskorbinska kislina,

ionski pari $\text{Fe}^{2+}/\text{Fe}^{3+}$; $\text{Cu}^{+}/\text{Cu}^{2+}$

→ **aktivnosti mikroorganizma (kvasovk) in produktov njihovega metabolizma**

sladorji (glukoza) → alkoholi + biomasa

REDOKS KARAKTERISTIKE VIN

Najbolj kvalitetna vina odražajo najnižji redoks potencial

Vina posedujejo reduktivni karakter in so nagnjena k oksidaciji

neoksidirana vina $E = 100 - 180 \text{ mV}$; $rH=18$ do 20

oksidirana vina $E = 268 - 300 \text{ mV}$; $rH=24$ do 25

Bela vina v steklenicah : $E = 275 -280 \text{ mV}$

Rdeča vina v steklenicah : $E = 100 -223 \text{ mV}$

REDUCENTI:

SO_2 , askorbinska kislina, celični produkti (cistein , glutation) nižajo redoks potencial in delujejo reduktivno

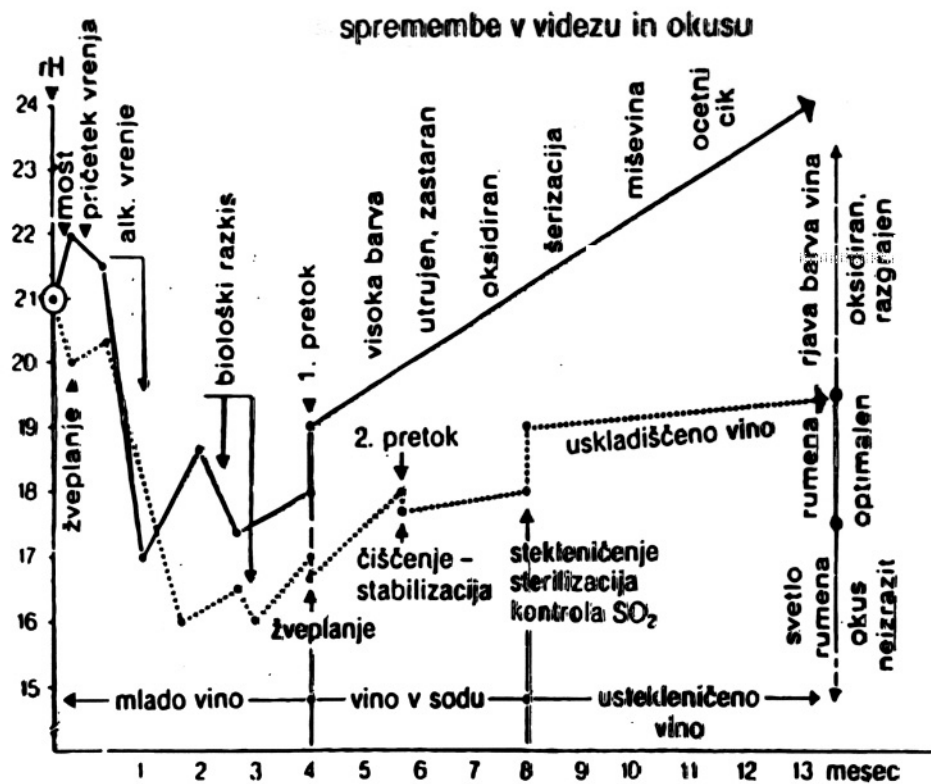
OKSIDANTI:

kisik iz zraka, bentoniti, mineralni adsorbenti, peroksid

Antioksidanti med fermentacijskim procesom :

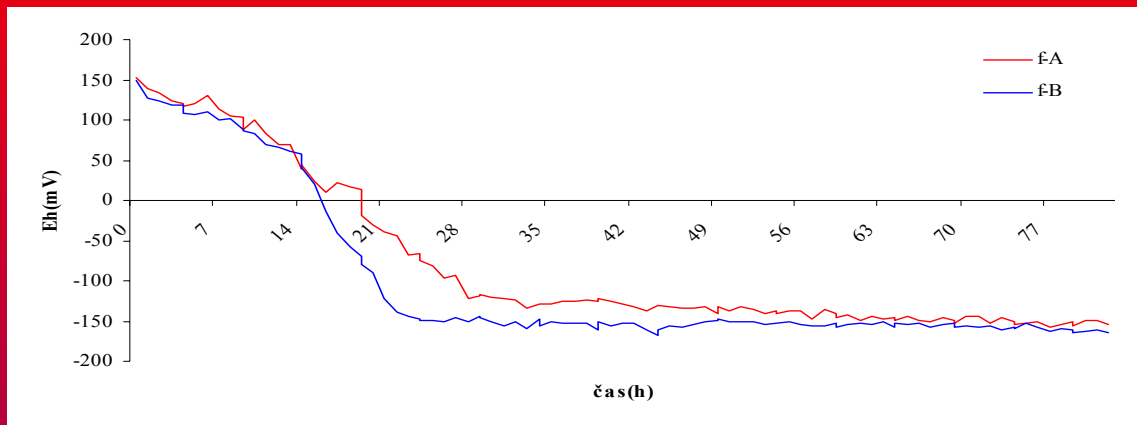
ogljikov dioksid in plinasti dušik za zaščito površine nad fermentacijsko brozgo in preprečitev oksidacije v ceveh

Redoks potencial v fermentaciji vina

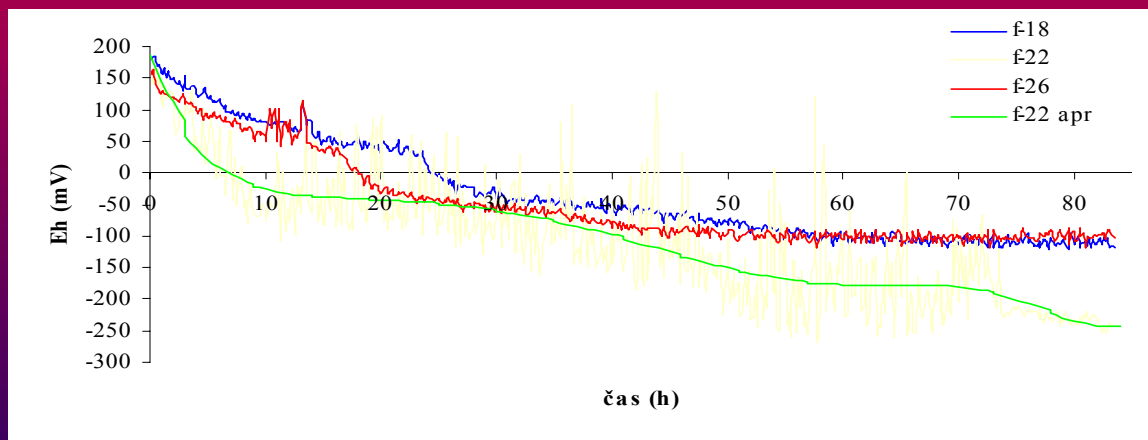


Legenda: — nežveplan mošt
 žveplan mošt

Redoks potencial pri fermentaciji kabernet sauvignona

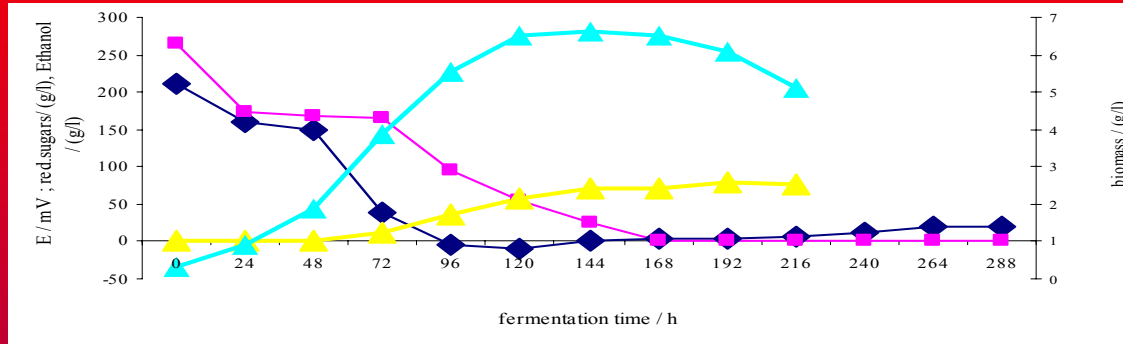


Z vpihavanjem CO₂ in brez vpihavanja CO₂

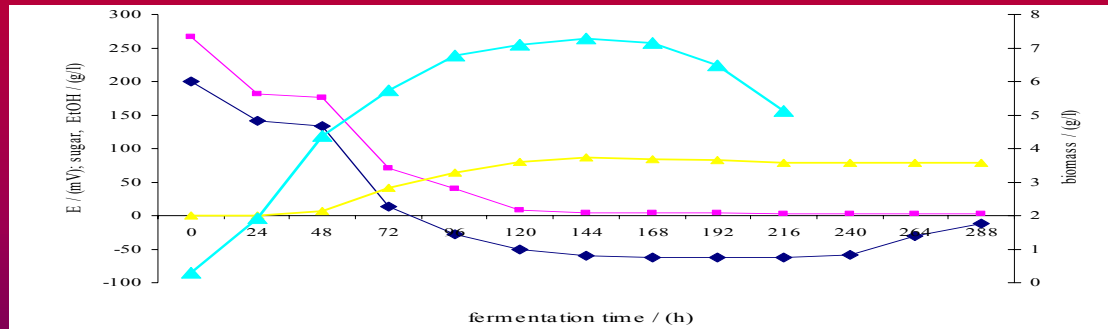


T 18, 22, 26 ° in aproksimacija 26 °C

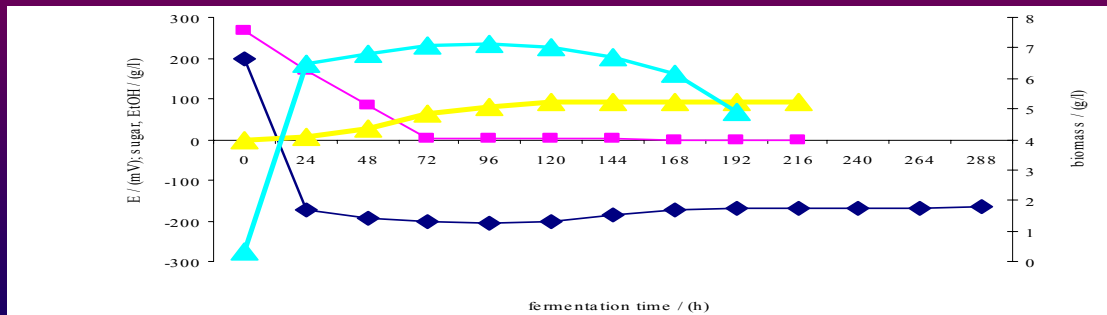
Fermentacija *sauvignona* pri T 15, 18 in 24 °C



T 15°C



T 18°C



T 24°C

Fermentacija *modre frankinje* pri T 24 °C

