

## **Mechanizmy powstawania oraz występowanie pirazyn w destylatach spirytusowych, jako element oceny prawidłowości obróbki termicznej surowca w procesie technologicznym**

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### **Mechanisms of pyrazine compounds formation and validation of raw material thermal processing during technological process based on the presence of pyrazine in raw spirits**

#### **Summary**

Pressure-thermal processing of starchy plants raw materials with the use of Henze steamer can cause a number of unfavourable phenomena connected to sugars caramelization and Maillard reactions. In technological conditions, the effectiveness of starch grains extraction from cellular structures can be assessed macroscopically; however, it is not easy to gain information about the intensity of the phenomena mentioned above. Our experiments led to the conclusion that the raw spirits obtained from raw materials, subject to intensive thermal processing, contain pyrazine compounds such as 2,5-dimethylpyrazine and 2,3,5,6-tetramethylpyrazine. These compounds were not observed in the spirits prepared in the optimized pressure-thermal process. Optimization of the steaming process can limit losses in ethanol yield up to 0.85 dm<sup>3</sup>/100 kg of raw material. It also significantly increases the quality of raw spirit through lowering of acetaldehyde and organic acids concentrations. Our data suggest that determination of pyrazine compounds in raw spirits can be used as a sensitive indicator in the validation of pressure-thermal processing starchy plants raw materials used for ethanol production.

#### **Key words:**

pyrazins, thermal processing of raw material, alcoholic fermentation, alcoholic fermentation by-products

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