

Fermented unripe cornelian cherry as a functional food

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INTRODUCTION

Consumer trends are changing due to the increasing awareness of the link between diet and health. The largest segment of the functional food market comprises foods fortified with probiotics, prebiotics and synbiotics. Fruits already containing high levels of beneficial substances can be reinforced with probiotic bacteria that can bring about additional health promoting features. Cornelian cherry (*Cornus mas* L.) fruits are rich sources of polyphenols and iridoids, valuable for fresh consumption or processing. Unripe fruits is manufactured by Arboretum in Bolestraszyce as a traditional product (1). The aim of this work was to evaluate the probiotic strains in order to determine their potential in the development of new starter cultures for functional food – green fermented cornelian cherry.

EXPERIMENTAL METHODS

3 probiotic strains were used: *Lb. casei* LOCK 0919 (Lc919), *Lb. rhamnosus* LOCK 0908 (Lr908) and *Lb. rhamnosus* LOCK 0900 (Lr900). Fruits were blanched at 85°C for 5 min in 5% NaCl and then fermented (room temperature, 6 weeks) with the addition of the strain. After fermentation, the amount of lactic acid bacteria (LAB) was determined on MRS agar following incubation at 30°C for 72 h under anaerobic conditions. The content of lactic acid was checked (2). Polyphenols and iridoids were analyzed according to Kucharska et al. (3).

RESULTS AND DISCUSSION

The amount of LAB at the level of 10⁶ was observed in the samples where Lr900 and 908 were used. Lactic acid was the major metabolite of investigated samples, influencing both the preservation of the fermented products and their sensorial characteristics. Its quantities in ranged from 0.10 to 0.11 g/100 ml, with the highest for *Lb. rhamnosus*. The effect of strain on polyphenols and iridoids was determined. Among the compounds detected were hydroxybenzoic acid derivatives: gallic acid and its derivative, protocatechuic and ellagic acids, and hydroxycinnamic acid derivatives: neochlorogenic acid, chlorogenic acid and chlorogenic acid derivative. Gallic acid and its derivative were the main products in all of the tested samples. The concentration of gallic acid ranged from 3.01 to 6.93 mg/100 g, and its derivative from 2.21 (Lc919) to 8.87 mg/100 g. The presence of loganic acid and cornuside was stated in investigated fermented fruits. The loganic acid content was higher and ranged from 15.52 (Lc919) to 130.23 mg/100 g (Lr 908), cornuside occurred in fruits in the quantities from 2.15 to 15.69 mg/100 g. As in the case of polyphenols, the content of iridoids was the lowest for the samples fermented with Lc919 and the highest for the samples fermented with Lr908.

CONCLUSIONS

The tested microorganisms had a differentiated impact on the content of biologically active compounds. *Lb.rhamnosus* 908 proved to be the most effective strain.

REFERENCES

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