RAZVOJ TEHNOLOŠKE METODE ZA MIKROBIOLOŠKU DEKONTAMINACIJU SUVOG CVETA KANABISA

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U zemljama sa Nacionalnim programom za medicinski kanabis, farmaceutski propisi preciziraju da biljni proizvodi od kanabisa moraju da se pridržavaju strogih bezbednosnih standarda u vezi sa mikrobnom kontaminacijom. Tretman korišćenjem neopasne radio frekvencije (RF) je nejonizujući, što znači da neće promeniti molekularnu strukturu cveta kanabisa (1). Naš cilj je bio da razvijemo tehnološku metodu za dekontaminaciju suvog cveta kanabisa, sa ciljem da se smanji broj nekih mikroorganizama u samom cvetu i na ovaj način obezbediti zdravstvena bezbednost biljnog proizvoda. U tu svrhu koristili smo suvo cveće THC-sorte Jack Kush, sa tretmanom u aparatu za zračenje APEX7, na različitim programima. Pre tretmana, sušeno cveće ima sledeću mikrobiološku analizu: Ukupan broj aerobnih mikroba (TAMC)=4,6*103CFU/g; Ukupan broj kvasca i plesni (TYMC)=2,3*104CFU/g; Gram-negativne bakterije otporne na žuč (BTG-)<102CFU/g i >10CFU/g; Escherichia coli (EC) i Salmonella (SA) su odsutne. Po preporuci proizvođača APEX7, razvili smo tri načina za ozračivanje osušenog cveta, i to: I program (90°C/1 minuta); II program (95°S/1 minuta) i III program (98°S/1 minuta). Nakon tretmana sa I programom dobijeni su sledeći rezultati: TAMC=6*103CFU/g; TYMC<10CFU/g; BTG-<10CFU/g; EC i SA su odsutni. Nakon tretmana II i III programom dobijeni su isti rezultati: TAMC=4*103CFU/g; TYMC<10CFU/g; BTG-<10CFU/g; EC i SA su odsutni. Mikrobiološke analize se rade u skladu sa Ph.Eur. monografija 04/2019:50108. Možemo zaključiti da je korišćena metoda efikasna u drastičnom smanjenju broja patogenih mikroorganizama i na taj način proizvodi bezbedan krajnji proizvod.

Literatura

1. Kovalchuk, O., et al. The effect of cannabis dry flower irradiation on the level of cannabinoids, terpenes and anti-cancer properties of the extracts. Biocatalysis and Agricultural Biotechnology 2020; 29: 101736.

DEVELOPMENT OF A TECHNOLOGICAL METHOD FOR MICROBIOLOGICAL DECONTAMINATION OF DRY *CANNABIS* FLOWERS

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In the countries with a National medicinal cannabis program, pharmaceutical regulations specify that herbal cannabis products must adhere to strict safety standards regarding microbial contamination. Treatment using non-hazardous radio frequency (RF) is non-ionizing, meaning it won't change the molecular structure of the cannabis flower (1). Our goal was to develop a technological method for the decontamination of a dry cannabis flower, with the aim of reducing the count of some microorganisms in the flower itself, thus ensuring the health safety of the herbal product. For this purpose, we used a dry flowers of the THC-variety *Jack Kush*, with its treatment in an APEX7 irradiation machine, on different programs. Before the treatments, dried flowers had the following microbiological analysis: *Total aerobic microbial count* (*TAMC*)=4.6*10^3CFU/g; *Total yeast and mold count* (*TYMC*)=2.3*10^4CFU/g; *Bile-tolerant gram-negative bacteria* (*BTG-*)<10^2CFU/g and >10CFU/g; *Escherichia coli* (*EC*) and *Salmonella* (*SA*) are absent. Following the recommendation of the APEX7 manufacturer, we have developed three ways to irradiate the dried flower, namely: 1st program (90°C/1 min); 2nd program (95°C/1 min) and 3rd program (98°C/1 min). After treatment with 1st program the following results were obtained: *TAMC*=6*10^3CFU/g; *TYMC*<10CFU/g; *BTG-*<10CFU/g; *EC* and *SA* are absent. After treatment with 2nd and 3rd program, the same results were obtained: *TAMC*=4*10^3CFU/g; *TYMC*<10CFU/g; *BTG-*<10CFU/g; *EC* and *SA* are absent. Microbiological analyzes were performed in accordance with the *Ph.Eur.* monograph 04/2019:50108. We can conclude that the method used is effective in drastically reducing the count of pathogenic microorganisms and thus producing a safe final product.

References

1. Kovalchuk, O., et al. The effect of cannabis dry flower irradiation on the level of cannabinoids, terpenes and anti-cancer properties of the extracts. Biocatalysis and Agricultural Biotechnology 2020; 29: 101736.