



УНИВЕРЗИТЕТ У НОВОМ САДУ  
UNIVERSITY OF NOVI SAD

## TOP ACHIEVEMENTS 2022

### FACULTY OF TECHNOLOGY

---

Journal paper - M21a: Microencapsulation of juniper berry essential oil (*Juniperus communis* L.) by spray drying: microcapsule characterization and release kinetics of the oil (<https://doi:10.1016/j.foodhyd.2021.107430>)

Food Hydrocolloids (IF 11,504 (Food science and technology, 5/144))

Dr. Jelena Bajac, assistant; first author

---

Microencapsulation of juniper berry essential oil (JBEO) has been used for protection of essential oil volatiles, giving the possibility of their implementation as a food flavouring agent and preservative. The objective of this study was to encapsulate JBEO by spray drying and to evaluate the influence of different wall materials [gum arabic (GA), maltodextrin (MD), sodium alginate (ALG) and whey protein concentrate (WPC)] on microcapsule properties. Oil retention efficiency, encapsulation efficiency, moisture content, hygroscopicity, dissolution time, solubility, density properties, flowability, porosity, particle size, thermal behaviour and release properties were analysed. Best results were obtained when JBEO was encapsulated using GA/MD (1:1) as a carrier producing microcapsule with the highest encapsulation efficiency (70.07%) and the best results in density properties, porosity, dissolution time and thermal properties. GA as a carrier formed the microcapsules with the highest oil retention efficiency (84.67%), but due to the high surface oil content had reduced encapsulation efficiency. WPC may be preferable for moisture and hygroscopicity decreasing. The GA/MD formulation had achieved the complete and prolonged release of the JBEO from microcapsules in oily food system. The release profiles were fitted with different mathematical models.

