

Biochemical, Microstructural, and Probiotic Bacterial Patterns of Innovative Fresh Cheese Fortified with *Helianthus tuberosus* Tubers

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The microbiological safety of the DJATP

To obtain DJATP from fresh tubers, all processing steps were carried out under strict sanitary conditions. In spite, of the preparation steps (see 2.1. Preparation of JA Tubers) being harsh enough to eliminate microbial growth, the microbiological evaluation was performed.

The microbiological evaluation of the resulting DJATP was performed as previously described by Andrews [1]. The detections include the enumeration of total bacteria, coliform, and fecal coliform, in addition to the counts of *Escherichia coli*, *Salmonella* spp., and *Staphylococcus aureus*. These safety tests ensure the hygienic conditions of the DJATP product.

Usually, dehydrated vegetable products are regarded as microbiologically safe for consumers thanks to the thermal treatment methods employed during processing. Nevertheless, these products have the potential to become tainted with foodborne pathogens, which can subsequently result in foodborne disease outbreaks. So, the obtained DJATP was subjected to microbiological analysis. The DJATP product was analyzed for its microbiological safety.

The microbiological findings for the product were deemed satisfactory overall (Supplementary Table S1). The total bacterial count of the product was 4750 CFU/g, while the count of coliform bacteria, fecal coliform bacteria were not detected in the prepared product, the same was applied to *Salmonella* spp., *Staphylococcus aureus* and *Escherichia coli*. The low microbial count suggests that proper sanitary procedures were applied throughout the processing. Mold and yeast were also found to be less than 12 CFU/g. Our results are consistent with what was reported by Javid, *et al.* [2] for dried potatoes. However, the microbiological standard values are 10000/gram for total bacterial count, 10/gram of coliform, and negative for *Escherichia coli*, *Salmonella* spp. , and *Staphylococcus aureus* [2].

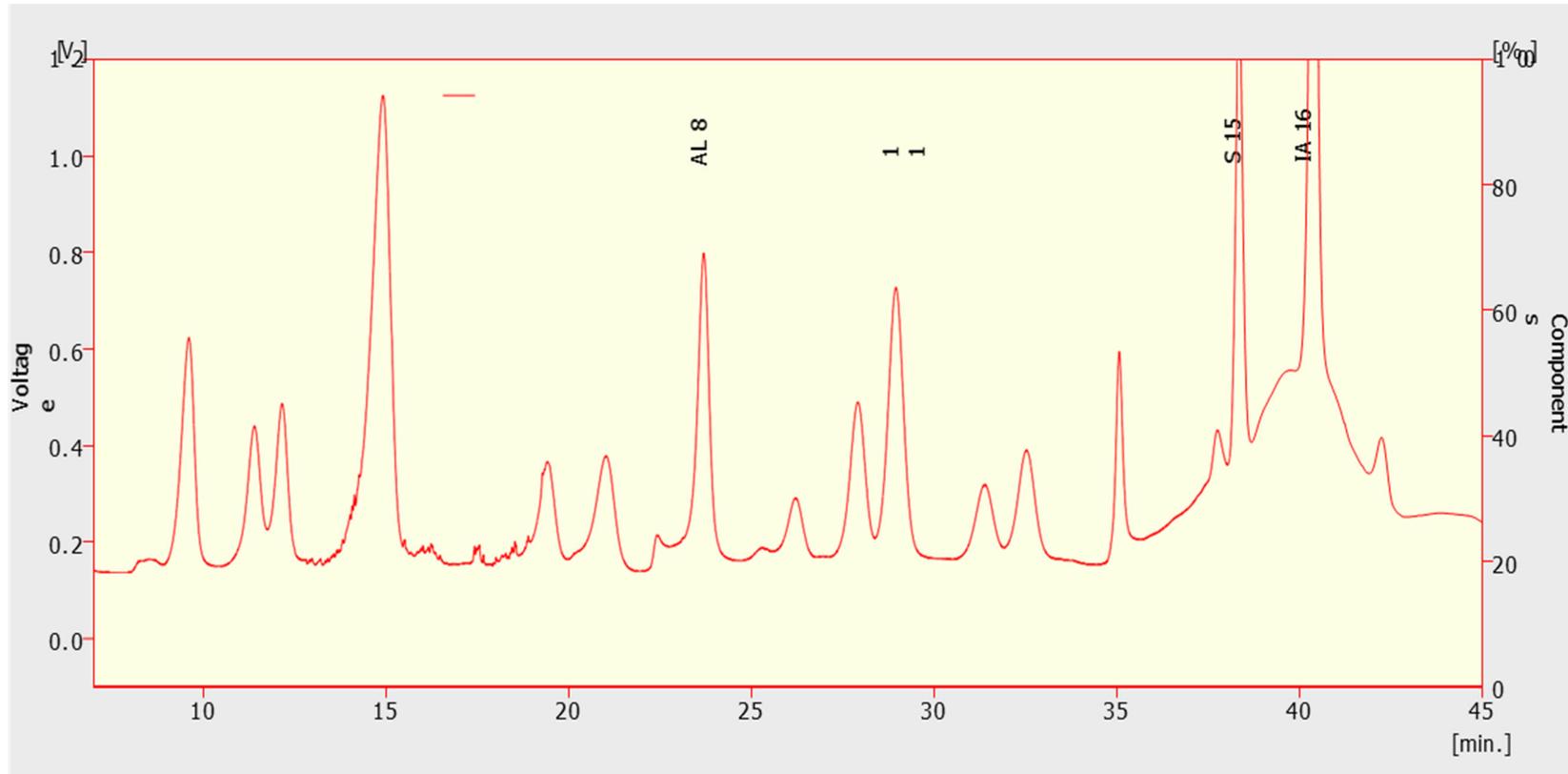
Supplementary Table S1. Microbiological evaluation of the DJATP.

Microbiological test	The microbial count (CFU/g)
Total bacterial count	4750
Total coliform bacteria	Nil
Fecal coliform bacteria	Nil
<i>Escherichia coli</i>	Nil
<i>Salmonella</i> spp.	Nil
<i>Staphylococcus aureus</i>	Nil
Mold and yeast	<12

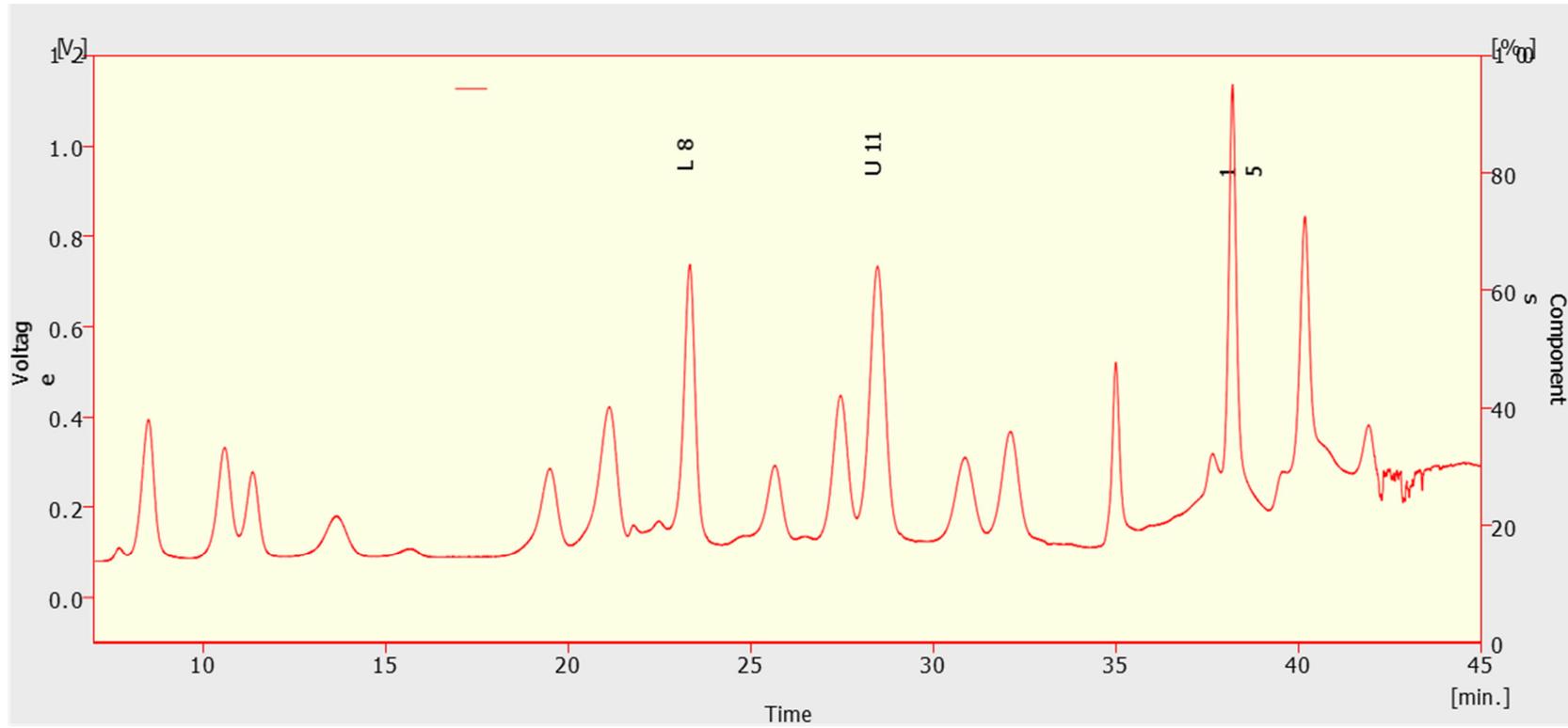
*CFU= Colony Forming Unit; Nil= not detected.

References

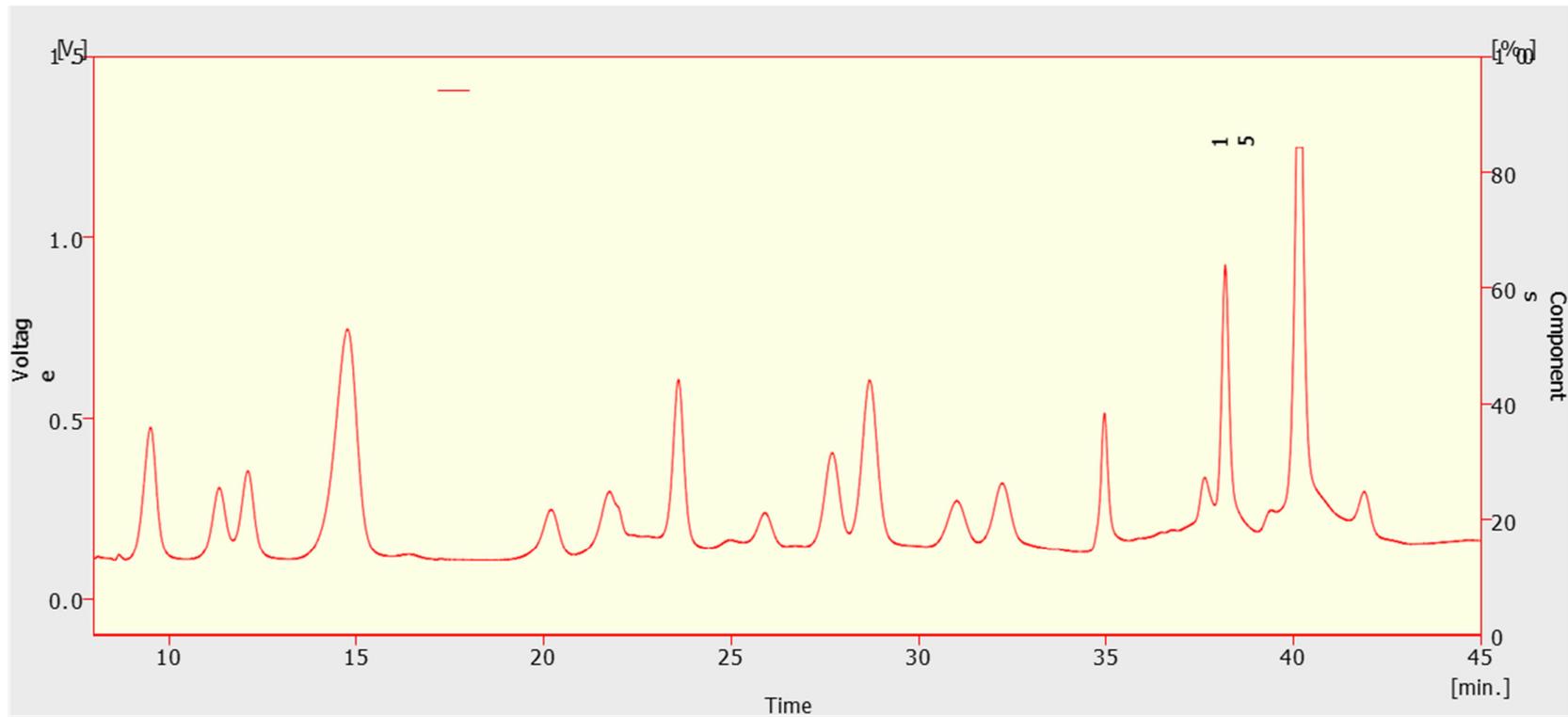
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2. Javid, A.; Afridi, M.; Arshad, H.; Paracha, G.; Said, H.; Mohammad, P.; Sudhair, A. Comparative physiochemical and microbiological analysis of potato powder produce from two potato cultivar (*Solanum tuberosum* L.) grown in Peshawar valley, Pakistan. *World Applied Sciences Journal* **2015**, 33, 267-270.



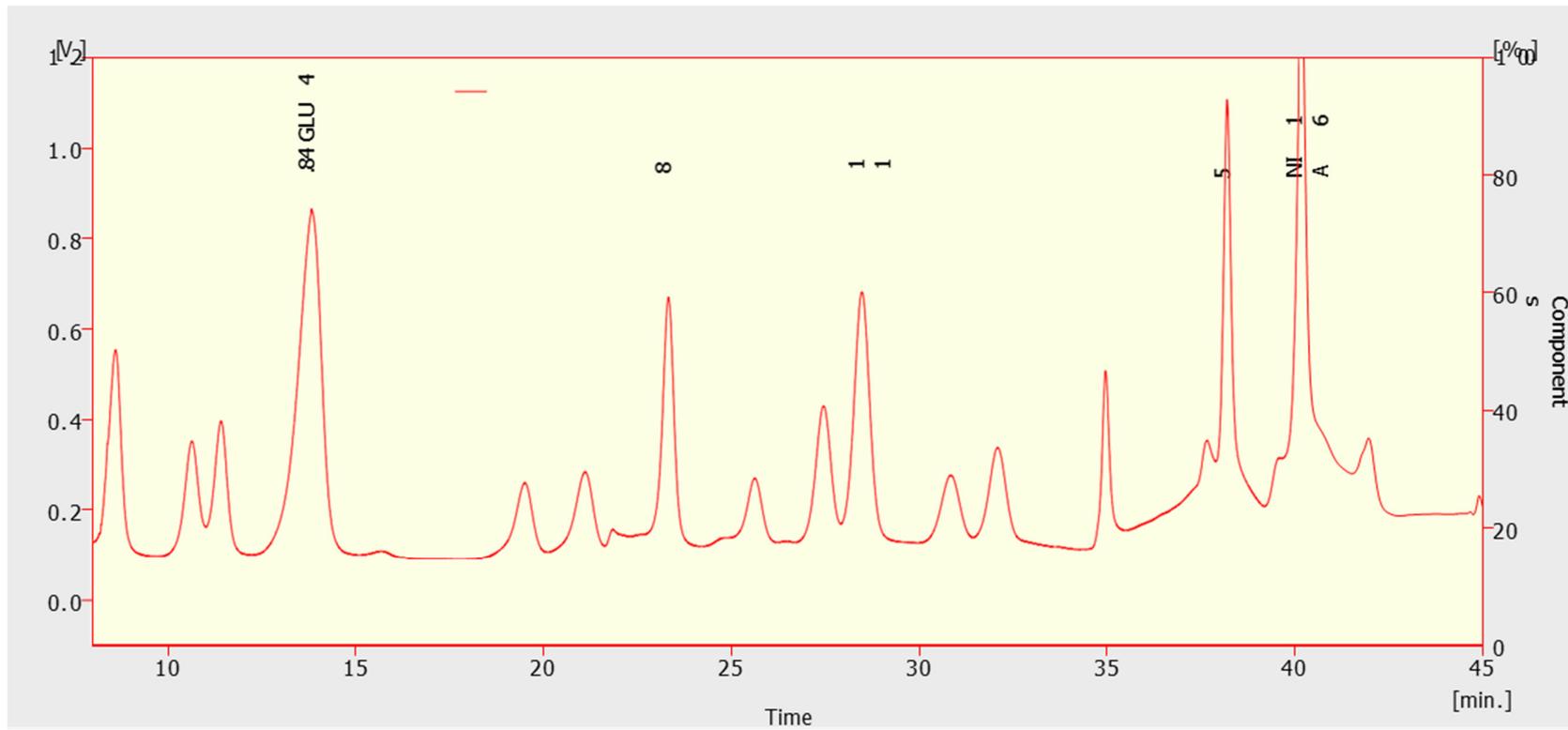
Supplementary Figure S1. Amino acid contents of fresh cheese made from buffalo skimmed milk using ABT-5 starter.



Supplementary Figure S2. Amino acid contents of DJATP-fortified fresh cheese at 1% made from buffalo skimmed milk using ABT-5 starter.



Supplementary Figure S3. Amino acid contents of DJATP-fortified fresh cheese at 3% made from buffalo skimmed milk using ABT-5 starter.



Supplementary Figure S4. Amino acid contents of DJATP-fortified fresh cheese at 6% made from buffalo skimmed milk using ABT-5 starter.