Response to Reviewer 2 Comments

Dear Reviewer,

On behalf of my co-authors, we thank you very much for allowing us to revise our manuscript. We deeply appreciate the reviewer for their positive and constructive comments and suggestions on our manuscript entitled "Effect of a combination of ultrasonic germination and fermen-tation processes on the antioxidant activity and γ-aminobutyric acid content of food ingredients".

Those comments are all valuable and very helpful for revising and improving our paper, as well as the essential guiding significance to our research. We carefully revised this manuscript according to the comments of editors and reviewers.

We appreciate for Reviewer warm work earnestly. Also in accordance with your comments, we have expanded the Abstract, Keywords, Introduction, Materials, Methods, Results, Discussion and Conclusions part и in our manuscript.

Please find the revised version attached, which we would like to submit for your kind consideration. Here the response to reviewers and changes in details are all listed in this letter.

The previous work by the authors (ref. 13) is on a similar topic. One difference is the fermentation step used in the submitted work (in addition to ultrasound and germination used previously). However, particularly this step is not well described. It was based on using a poorly defined commercial preparation.

Perhaps you meant the article (ref. 25) (Naumenko, N.; Potoroko, I.; Kalinina, I. Stimulation of antioxidant activity and γ-aminobutyric acid synthesis in germinated wheat grain Triticum aestivum L. by ultrasound: Increasing the nutritional value of the product. Ultrasonics Sonochemistry 2022, 86, 106000. 10.1016/j.ultsonch.2022.106000), as with the above article (ref. 13) (Kalinina, I.; Fatkullin, R.; Naumenko, N.; Ruskina, A.; Popova, N.; Naumenko, E. Increasing the Efficiency of Taxifolin Encapsulation in Saccharomyces cerevisiae Yeast Cells Based on Ultrasonic Microstructuring. Fermentation 2022, 8, 378. https://doi.org/10.3390/fermentation8080378) elements of similarity are completely absent.

Two other varieties of wheat (grain of soft spring white wheat, variety Zauralochka and grain of soft red spring wheat, variety Erythrosperium, 2022) and a sample of barley (spring barley grain, variety Chelyabinets 1) are used in the article.

The conduct of the fermentation process of the objects is considerably specified, the choice of a complex starter, its composition, lines 162-175 is justified.

In the Results and Discussion, emphasis is placed on the increase in antioxidant activity, flavonoid and γ-aminobutyric acid content during fermentation, as well as digestibility criterion and growth of infusoria in nutrient media of the obtained food ingredients.

Detailed data on the use of a complex fermentative starter are given. Distinctive features proving scientific novelty are presented in the table.

Distinguishing features proving scientific novelty of the presented publication.

Article title	Effect of a combination of ultrasonic germination and fermen-tation processes on the antioxidant activity and γ-aminobutyric acid content of food ingredients	Stimulation of antioxidant activity and γ-aminobutyric acid synthesis in germinated wheat grain Triticum aestivum L. by ultrasound: Increasing the nutritional value of the product
Subjects of research	- grain of soft spring white wheat (Triticum aestivum L.), variety **Zauralochka**, har-vested in 2022, grown in the Ural region, Russia. The protein content was 12.5 ± 2.1 g/100g in terms of moisture content. - grain of soft red spring wheat (Triticum aestivum L.), variety **Erythrosperium**, 2022, grown in the Ural region, Russia. The protein content was 15.5 ± 1.8 g/100 g in terms of moisture content; - spring barley grain (Hordeum vulgare L.), variety **Chelyabinets 1**, crop 2022, grown in the Urals region, Russia. The protein content was 13.2 ± 1.9 g/100 g in terms of moisture content.	In this study, we used grain of soft spring white wheat (Triticum aestivum L.), «**Lubava**» variety. The grain was grown and harvested (2018) at the experimental farm of Bredinsky district, Chelyabinsk region, Russia. The protein content was 12.5 ± 0.03 g/100 g in terms of humidity.
Technologies used	A combination of germination processes followed by fermentation with a complex starter. Ultrasonic treatment (22 ± 1.25 kHz) was performed by means of changing power and length of time (245 W/L, intensity for 5 min). For the fermentation process of germinated samples of Triticum aestivum L. and Horde-um vulgare L., the dry starter "Vivo Probio" was diluted with sterile distilled water to a concentration of 1×10^{7} CFU/ml, respectively, and activated at 36 °C for 1 hour. Then, 500 g of the germinated cereals were accurately weighed and mixed with 10 ml of the activat-ed starter solution. Fermentation was then carried out at 36°C for 18 hours (according to the manufacturer's recommendations).	Only ultrasonic exposure during the germination process. Ultrasonic treatment (22 ± 1.25 kHz) was performed by means of changing power and duration (75, 113, 151, 189, 227, 265, 303, 341, 379 W/L, intensity for 3, 5, 7 min).
Results obtained (distinctive features)		

Article title	Effect of a combination of ultrasonic germination and fermen-tation processes on the antioxidant activity and γ-aminobutyric acid content of food ingredients	Stimulation of antioxidant activity and γ-aminobutyric acid synthesis in germinated wheat grain Triticum aestivum L. by ultrasound: Increasing the nutritional value of the product
	Phytic acid content decreased by 26 to 57% ($p \leqslant 0.05$)	Not studied
	The nutrient media obtained from food ingredients stimulate the growth of Tetrahymena pyriformis infusoria in 24 hours by a factor of 1.4-1.9 ($p \leqslant 0.05$)	Not studied
	The digestibility criterion increases by an average of 42.4- 93.9% ($p \leqslant 0.05$)	Not studied
	The combination of the germination process and subsequent fermentation with a complex starter can increase the amount of flavonoids by 35 - 68 % ($p \leqslant 0.05$). This fact is significant relative to the single process of germination	The germination process increases the amount of flavonoids by 16 to 19% ($p \leqslant 0.05$)
	The combination of the germination process and subsequent fermentation with a complex starter increases the total antioxidant activity by 31 - 51 % ($p \leqslant 0.05$). This fact is significant relative to the single process of germination	The germination process increases total antioxidant activity by 5.7 - 15.6 % ($p \leqslant 0.05$)
	The combination of the germination process followed by fermentation with a complex starter can increase the γ -amino butyric acid content by 3.1-4.7 times ($p \leqslant 0.05$). This fact is significant relative to the single process of germination	The germination process increases the γ -aminobutyric acid content by 2.1 to 2.7 times ($p \leqslant 0.05$)

Thus, the team of authors believes that the research presented have scientific novelty, and the developed technology of high efficiency and practical relevance.

A clear specification of the crops varieties is also missing (no references).

References made to the specification of crops, lines 109-117

The advances against the previous work are not clearly discussed. In addition, a number of word-to-word citations form this work have been found.

The material of the article is revised in detail, the distinctive features of the results are presented in comparison with previous studies.