

CORRECTION

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Correction: Analysis of exogenous lactic acid bacteria on growth and development of different herbaceous peony varieties and rhizosphere soil nutrients

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Following the publication of the original article [1], the authors reported an error in some references of the article due to the renumbering of the citations. The errors and the corrections are shown below:

The original article can be found online at <https://doi.org/10.1186/s40538-023-00516-2>.

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| Page | Section | Errors | Correction |
|------|--|---|---|
| 12 | Influence of LAB on rhizosphere soil nutrient and organic matter content | Many studies have shown that filling with microbial agents and organic fertilisers can regulate the physical properties of rhizosphere soil and soil fertility and create a stable nutrient space for plant growth [14, 28, 30] Previous research results show that the content of available phosphorus and potassium in the rhizosphere soil of pepper significantly increased after the application of microbial agents [29, 34] | Many studies have shown that filling with microbial agents and organic fertilisers can regulate the physical properties of rhizosphere soil and soil fertility and create a stable nutrient space for plant growth [14] Previous research results show that the content of available phosphorus and potassium in the rhizosphere soil of pepper significantly increased after the application of microbial agents [34] |

| Page | Section | Errors | Correction |
|------|--|---|--|
| 13 | | The application of organic fertilization by the digestate increased the content of organic matter in the rhizosphere soil [32, 35] | The application of organic fertilization by the digestate increased the content of organic matter in the rhizosphere soil [35] |
| 14 | Influence of LAB on rhizosphere soil enzyme activity | <p>Soil enzyme activity is an important index reflecting soil quality, with changes in enzyme activity affecting the absorption of effective nutrients by plants [33, 36, 37].</p> <p>Different types of microbial agents increased the activity of urease, phosphatase, and reductase in watermelon substrate soils [34, 38]</p> <p>Studies have shown that in flue-cured tobacco, after treatment with different concentrations of compound microbial agents, with an increase in concentration, the enzyme activity will increase first increases and then decreases [35, 39]</p> <p>Changes in the soil microbial community structure and quantity are important indicators of soil fertility, nutrient conversion rates, and microbial activity [35, 40]</p> | <p>Soil enzyme activity is an important index reflecting soil quality, with changes in enzyme activity affecting the absorption of effective nutrients by plants [36, 37]</p> <p>Different types of microbial agents increased the activity of urease, phosphatase, and reductase in watermelon substrate soils [38]</p> <p>Studies have shown that in flue-cured tobacco, after treatment with different concentrations of compound microbial agents, with an increase in concentration, the enzyme activity will increase first increases and then decreases [39]</p> <p>Changes in the soil microbial community structure and quantity are important indicators of soil fertility, nutrient conversion rates, and microbial activity [40]</p> |

| Page | Section | Errors | Correction |
|------|--|---|---|
| | | Many studies have shown that inoculation with microbial agents can induce changes in rhizosphere microbial communities and improve the soil microecological environment [36, 37, 41, 42] | Many studies have shown that inoculation with microbial agents can induce changes in rhizosphere microbial communities and improve the soil microecological environment [41, 42] |
| | | After the application of <i>Bacillus subtilis</i> SNB-86, the number of bacteria and actinomycetes in the rhizosphere soil of <i>Malus hupehensis</i> seedlings increased, and the number of fungi decreased significantly [35, 43] | After the application of <i>Bacillus subtilis</i> SNB-86, the number of bacteria and actinomycetes in the rhizosphere soil of <i>Malus hupehensis</i> seedlings increased, and the number of fungi decreased significantly [43] |
| | | The richness and composition of rhizosphere microorganisms are closely related to soil properties, and the types and contents of metabolites in rhizosphere soil, the species and relative abundance of bacteria and fungi in rhizosphere soil of different varieties of the same plant are also different [4, 38, 44]... | The richness and composition of rhizosphere microorganisms are closely related to soil properties, and the types and contents of metabolites in rhizosphere soil, the species and relative abundance of bacteria and fungi in rhizosphere soil of different varieties of the same plant are also different [4, 44]... |
| | Influence of LAB on rhizosphere soil free salicylic acid content | Salicylic acid is a common phenolic acid which has physiological functions such as regulating plant growth and aging [39, 45] | Salicylic acid is a common phenolic acid which has physiological functions such as regulating plant growth and aging [45] |

| Page | Section | Errors | Correction |
|--|---|---|---|
| 15 | Influence of LAB on herbaceous peony root physiology Influence of LAB on antioxidant oxidase activity and root MDA content | When the phenolic acid content in the soil is too high, it affects root respiration, changes mineral absorption, and inhibits plant growth [40, 46] | When the phenolic acid content in the soil is too high, it affects root respiration, changes mineral absorption, and inhibits plant growth [46] |
| | | They can remove excessive reactive oxygen species from the plant body through coordination, maintain homeostasis, and protecting cells from damage [41, 47] | They can remove excessive reactive oxygen species from the plant body through coordination, maintain homeostasis, and protecting cells from damage [47] |
| | | ...is an important indicator of the degree of membrane lipid peroxidation and the response of plants to stress conditions [42, 48]. | ...is an important indicator of the degree of membrane lipid peroxidation and the response of plants to stress conditions [48]. |
| Influence of LAB on root vitality and osmotic adjustment substance content | Plant roots are important for the fixation and absorption of nutrients. Root vitality reflects the absorption capacity of the roots and directly affects plants growth [43, 44, 49, 50] | Plant roots are important for the fixation and absorption of nutrients. Root vitality reflects the absorption capacity of the roots and directly affects plants growth [49, 50] | |
| | The application of <i>Lactobacillus plantarum</i> mixture improves the germination and root growth of wheat, which has a positive effect on crop growth and development [45, 51] | The application of <i>Lactobacillus plantarum</i> mixture improves the germination and root growth of wheat, which has a positive effect on crop growth and development [51]. | |

| Page | Section | Errors | Correction |
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| | Influence of LAB on root system phytohormone and spermidine content | Under stress, osmotic adjustment substances such as proline and soluble sugars can actively accumulate organic or inorganic substances to increase cell fluid concentration, maintain cell water potential, and improve the ability of plants to withstand adverse stress [46, 47, 52, 53] | Under stress, osmotic adjustment substances such as proline and soluble sugars can actively accumulate organic or inorganic substances to increase cell fluid concentration, maintain cell water potential, and improve the ability of plants to withstand adverse stress [52, 53] |
| | | A previous study showed that the application of LAB could significantly increase the content of soluble sugar and soluble protein in <i>Petunia</i> [48, 54]. | A previous study showed that the application of LAB could significantly increase the content of soluble sugar and soluble protein in <i>Petunia</i> [54] |
| | | Plant hormones and polyamines are compounds that are derived from important metabolic pathways in plants, which can not only regulate the synthesis and metabolism of substances to regulate plant growth, but also enhance plant stress resistance [49, 55] | Plant hormones and polyamines are compounds that are derived from important metabolic pathways in plants, which can not only regulate the synthesis and metabolism of substances to regulate plant growth, but also enhance plant stress resistance [55] |
| Influence of LAB on the root system paeoniflorin content | Previous studies have found that the application of nitrogen increased auxin content and reduced ABA content at the beginning of the young panicle stage [50, 56] | Previous studies have found that the application of nitrogen increased auxin content and reduced ABA content at the beginning of the young panicle stage [56] | |
| | The accumulation and release of plant secondary metabolites are important factors that affect plant growth [51, 57] | The accumulation and release of plant secondary metabolites are important factors that affect plant growth [57] | |

| Page | Section | Errors | Correction |
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| | | Paeoniflorin is the main active substance in the herbaceous peony root system, has anti-inflammatory, antioxidant, and antiviral effects. As a main component of Chinese medicine, its content is not only controlled by related genes, but also by the soil environment [52, 58] | Paeoniflorin is the main active substance in the herbaceous peony root system, has anti-inflammatory, antioxidant, and antiviral effects. As a main component of Chinese medicine, its content is not only controlled by related genes, but also by the soil environment [58] |

The original article [1] has been updated.

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Reference

1. Yang X, Yang L, Shi Y, Lei F, Dong L, Zheng C, Zhang D, Sun L, Xie A, Sun X. Analysis of exogenous lactic acid bacteria on growth and development of different herbaceous peony varieties and rhizosphere soil nutrients. *Chem Biol Technol Agric.* 2023;10:144. <https://doi.org/10.1186/s40538-023-00516-2>.

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