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Summary

SARCOPENIA RELATED FUNCTIONAL STRAINS AND EXPLORE THEIR MECHANISMS BASED ON GERM-FREE ANIMALS

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Fecal microbiota transplantation improved muscle mass in sarcopenia patients, with metagenomic analysis identifying Roseburia inulinivorans as a beneficial strain that enhanced muscle outcomes in animal models through branched-chain amino acid metabolism.

KEY POINTS

- 16 out of 30 older sarcopenia patients showed significant skeletal muscle improvement after fecal microbiota transplantation, with a notable rise in muscle mass ($P < 0.05$).
- FMT distinctly modified intestinal microbiota composition, and metagenomic sequencing combined with culturomics identified Roseburia inulinivorans as a potentially beneficial strain for sarcopenia alleviation.
- In germ-free mouse models, Roseburia inulinivorans increased MyoG and MyoD expression ($P < 0.05$), augmented muscle mass ($P < 0.01$) and grip strength ($P < 0.01$), and diminished sarcopenia symptoms by boosting host branched-chain amino acid metabolism.
- The findings validate the intestinal microbiota-sarcopenia relationship and introduce novel insights for sarcopenia management strategies.

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