Fascinatingly, we found that raw and BFA had some accumulation effects in isobutyric acid, butyric acid, isovaleric acid, valeric acid, and hexanoic acid. We risked that this accumulation effect of AR may be due to its own toxicity. In this study, we employed the powder solution of medicinal materials to give medicine because of the doubt of dominant material basis of AR. It had been showed that the volatile oil of AR had some toxic and side effects such as stomach irritation, reduced alertness, locomotion, and reduced response to touch and balance.[26] This may be one of the reasons for the accumulation of SCFAs. The content of volatile oil in AR can be condensed by stir frying with bran,[27] which is in accordance with the result that the accumulation effect of BFA was less than that of raw AR in this study. Of course, it leftovers to be further considered whether there are other substances of toxic and side effects in AR. In the future, the correlation analysis between chemical components and SCFAs can be performed, which is also conducive to our considerate of the specific mechanism of SCFAs metabolism in SDS rats after the mode of AR administration.

There are still some absences in this study. In this study, we only preliminarily analyzed the SCFA metabolism in feces of SDS rats after the administering of raw and BFA. SCFA metabolism in other intestinal sections or tissues persisted unclear. Research has shown that the effects of SCFAs and gut flora are reciprocal. On the one hand, SCFAs are formed by the metabolism of gut flora. On the other hand, SCFAs can promote or inhibit gut flora and therefore move the structure of intestinal microecology.[28] There are huge changes in the number and types of micro-organisms dispersed in the intestine due to the differences of internal environment in diverse intestinal segments.[29] For instance, Meng *et al.*[30] found that the accumulation of SCFAs was detected in colon contents while the inadequate secretion of SCFAs was pragmatic in cecum contents when analyzing the metabolism of SCFAs in enteritis mice. In this study, we only examined the metabolism of SCFAs in feces of SDS rats. The metabolism of SCFAs in other intestinal segments and the potential mechanism of SCFA metabolism in SDS rats endured to be further considered.

CONCLUSION

In this study, a quantitative method was recognized to regulate seven SCFAs in rat feces by GC-MS, which was modest and precise with short time, and had high sensitivity and a satisfactory retrieval. We also established that raw and BFA can recover the acetic acid, propionic acid, and hexanoic acid metabolism in SDS rats, and BFA was more powerful than raw AR.

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Conflicts of interest

There are no conflicts of interest.

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