

# Comparative analysis of antioxidant activity and major physiologically active substances of diploid and tetraploid *Fallopia multiflorum* Thunb.

KI Hyun Kim<sup>1)</sup>, Young Sang Kim<sup>1)</sup>, Jae Ho Park<sup>1)</sup>, Ik Jae Kim<sup>1)</sup>,  
Young Ho Kim<sup>1)</sup>, Joung Hoon Lee<sup>2)</sup> and Sun Hee Woo<sup>3)\*</sup>

<sup>1)</sup>Chungbuk Agricultural Research and Extension Services, Cheong-Ju 28130, Korea.  
<sup>2)</sup>Department of Herbal Crop Research, NIHHS, RDA, Eumseong 27709, Korea.  
<sup>3)</sup>Department of Crop Science, Chungbuk National University, Cheong-Ju 28230, Korea.

## Back ground

The aim of this study was to comparison the total phenol and total flavonoid contents and antioxidant activity of diploid and tetraploid Fallopia multiflorum Thunb(FMT).

## Methods and Results

The DPPH radical scavenging ability of tetraploid and diploid showed excellent activity at a concentration of 100  $\mu$ g/ml of sample extract with 90% and 89%, respectively, with no significant difference in activity. In that case of ABTS, both tetraploid and diploid were also high at 95%, and there was no significance between polyploid. The analysis of superoxide anion radiological activity of *F. multiflora* found that the tetraploid at 85.3% was slightly higher than the 81.5% of diploid. The total polyphenol content was 133.9 mg/g in the tetraploid of *F. multiflora*, which was slightly higher than that of diploid at 121.7 mg/g. The flavonoid contents were also slightly higher at 114 mg/g in tetraploid than that of diploid at 107.8 mg/g. As a result of measuring DPPH radical scavenging ability, ABTS radical scavenging ability, and SOD antioxidant ability, the antioxidant and physiologically active substances of tetraploid and diploid showed excellent activity, and the PPH radical scavenging ability and ABTS radical scavenging ability did not show a significant difference. The content of SOD antioxidant capacity, total polyphenols and total flavonoids in the tetraploid showed a slightly higher tendency than the diploid, which is similar to the result of the metabolite component content analysis showing a slightly higher content than the diploid in the tetraploid.

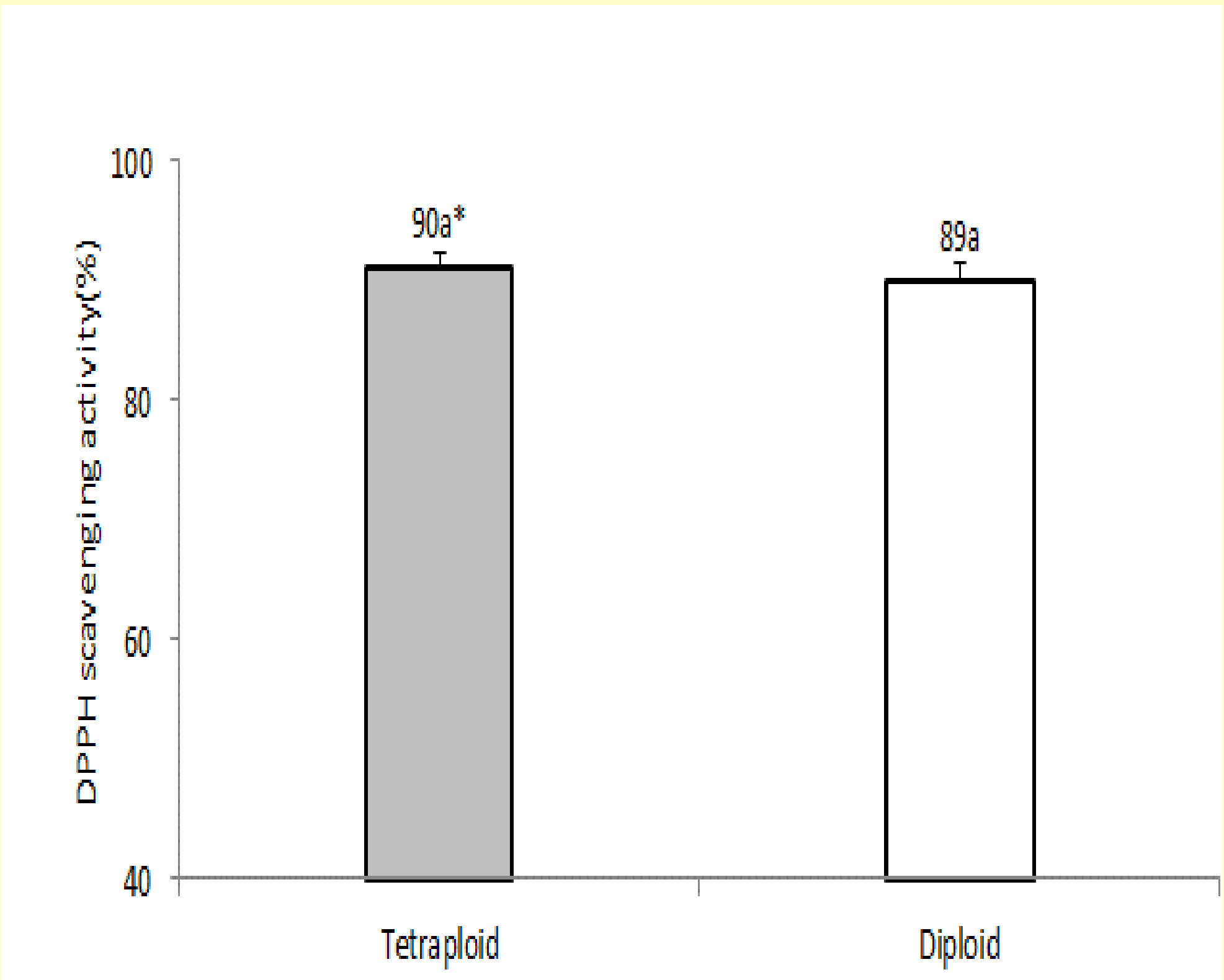


Fig 1. DPPH radical scavenging activity of the MeOH extract from Tetraploid and Diploid of *F. multiflora*.

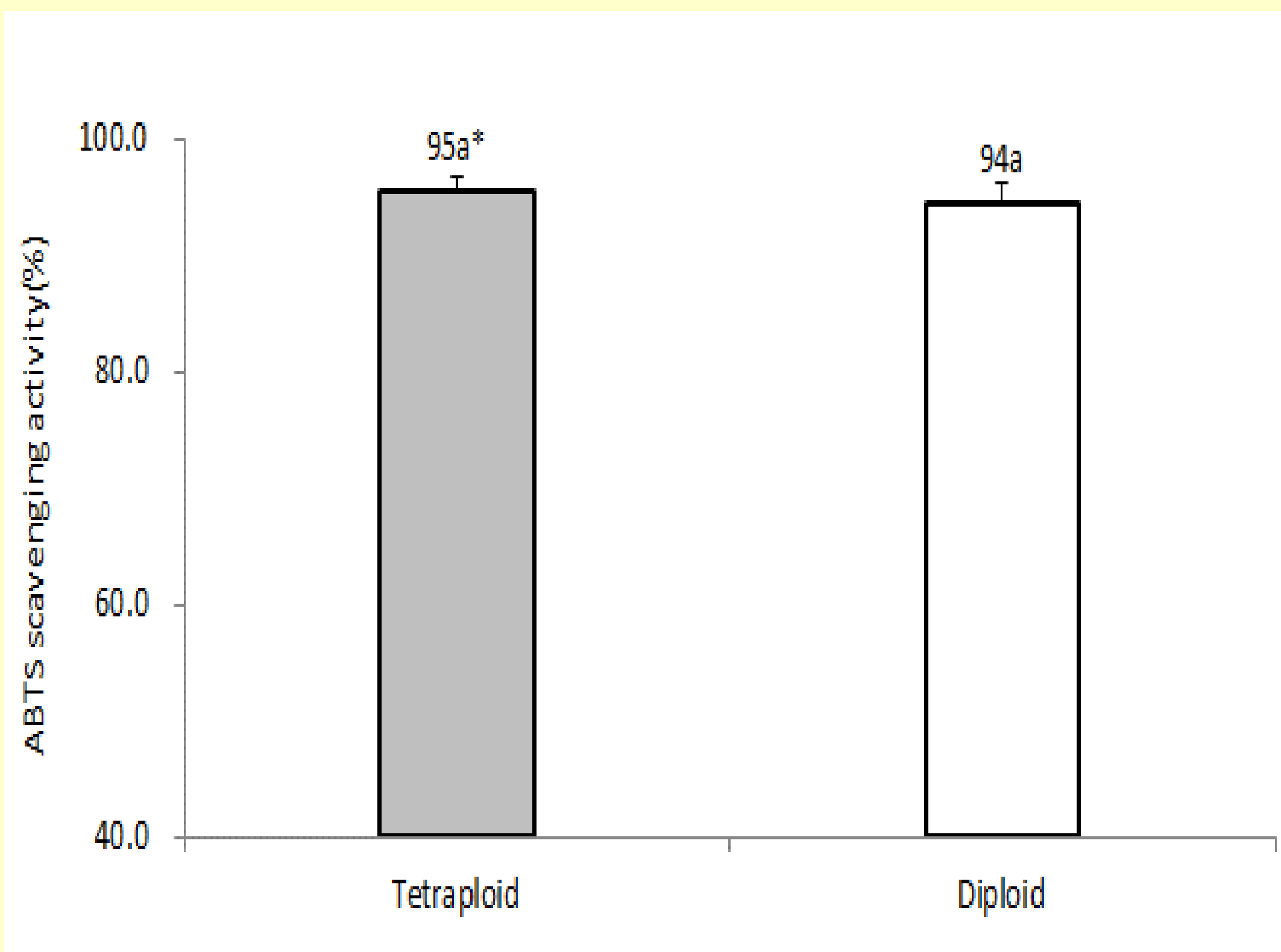


Fig. ABTS radical scavenging activity of the MeOH extract from Tetraploid and Diploid of *F. multiflora*.

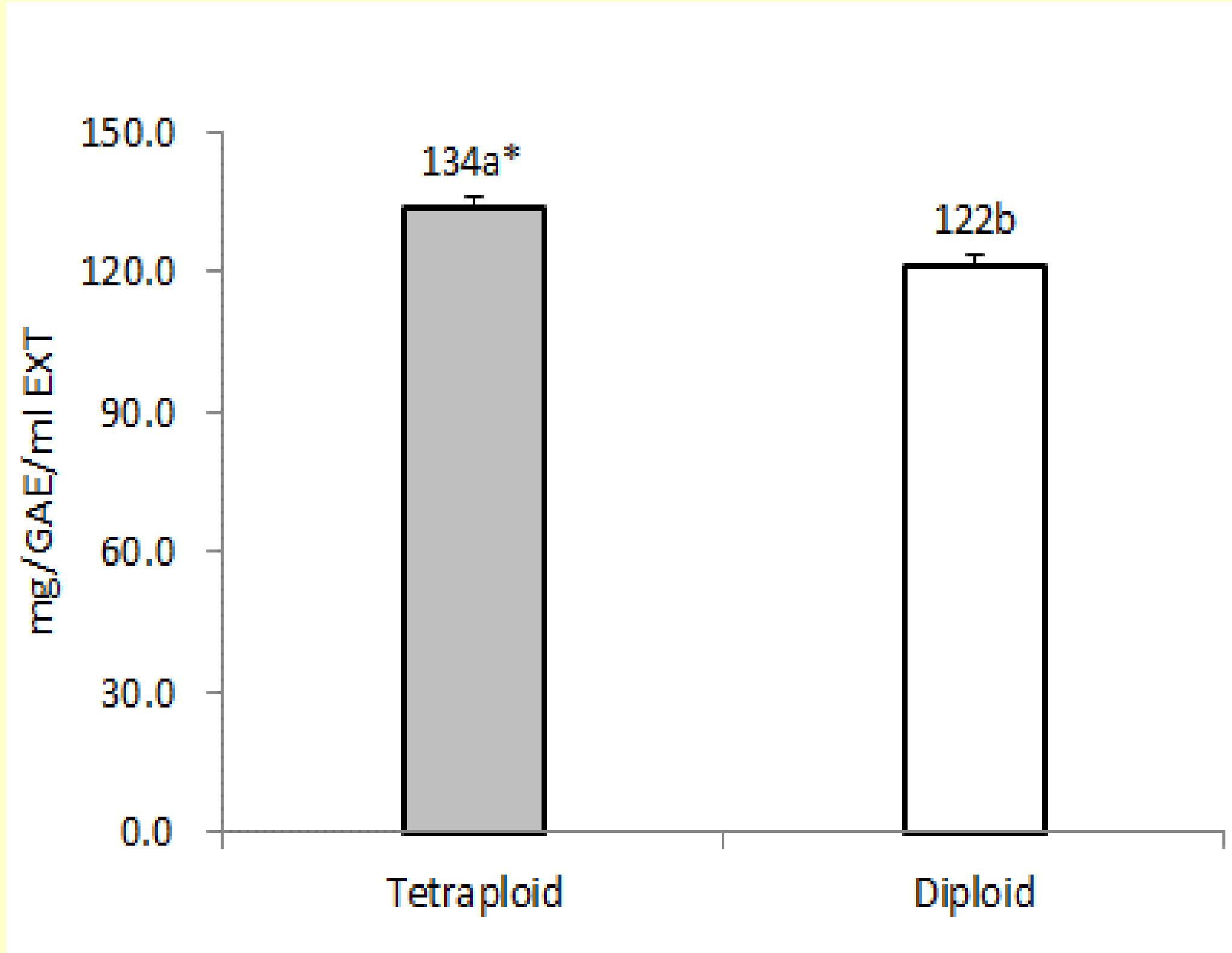


Fig 3. The content of total polyphenols of the MeOH extracts from tetraploid and diploid of *F. multiflora*.

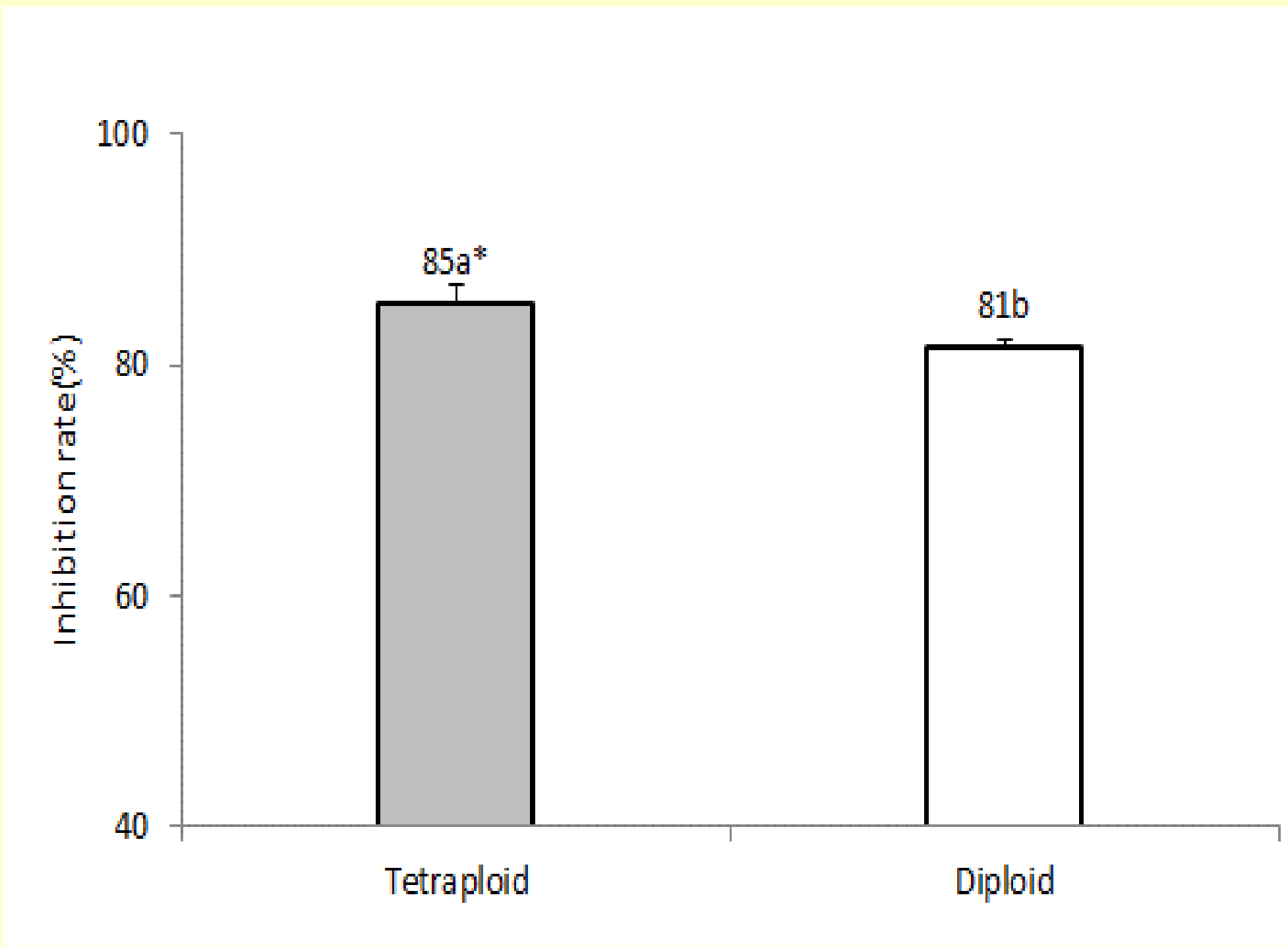


Fig. 4. The superoxide anion radical scavenging activity of the MeOH extracts from tetraploid and diploid of *F. multiflora*.

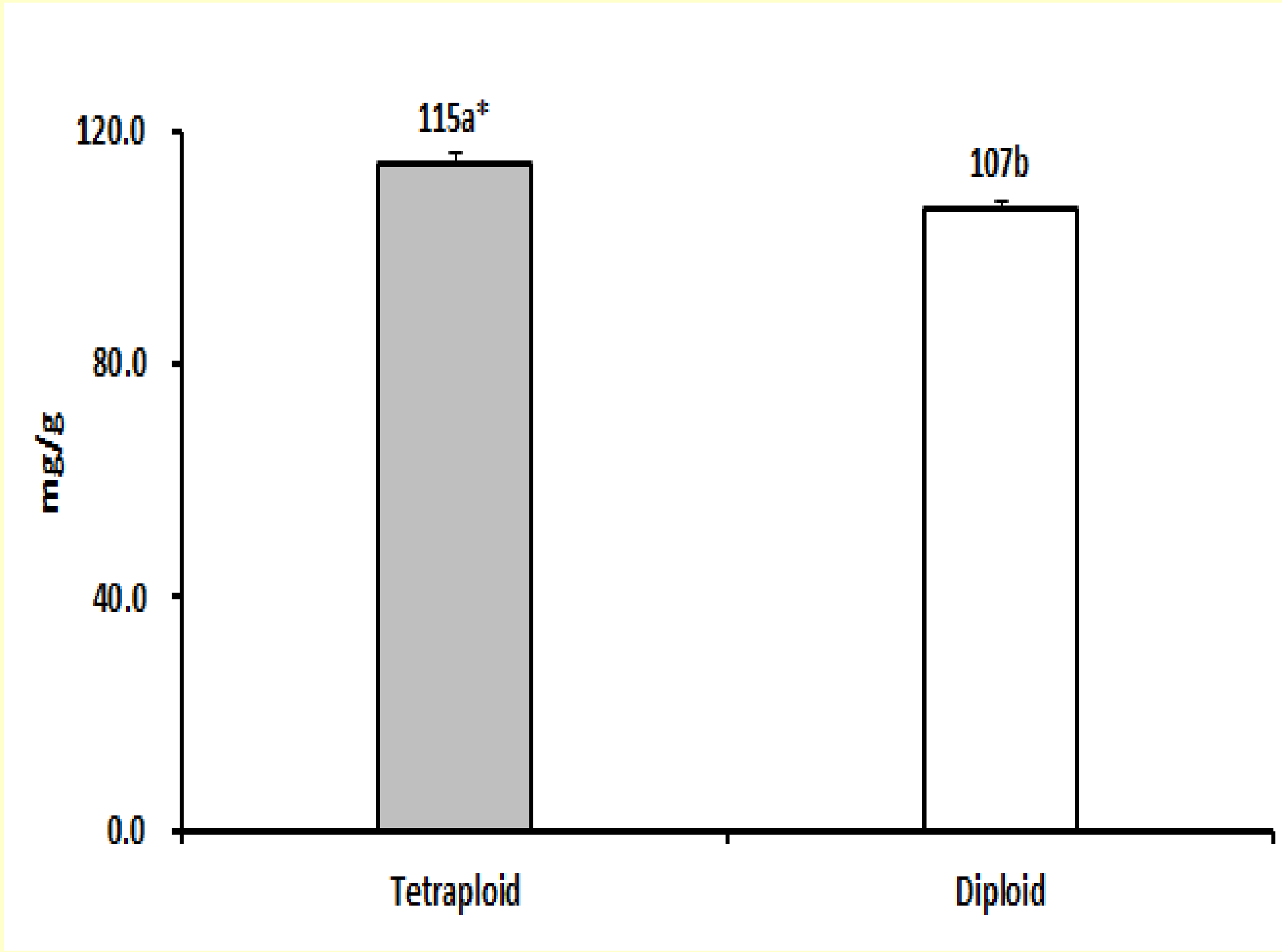


Fig 5. The content of total flavonoid of the MeOH extracts from tetraploid and diploid of *F. multiflora*.

## Conclusion

In conclusion, As above, the content of antioxidants and physiologically active substances did not have a significant effect on the increase in the component content due to ploid, but it was analyzed that the tetraploid was somewhat higher than the diploid with a certain trend, and the target index component and physiologically active substance component It is judged that tetraploids will be useful as breeding resources when cultivating high-functional varieties.

\*(Corresponding author) : E-mail : [ares1390@korea.kr](mailto:ares1390@korea.kr) Tel : +82-43-220-5572  
\*\*(Acknowledgement) This work was supported by a grant(PJ01264204)from Breeding of standard varieties on cultivated medicinal crop in small area.