Effects of selenium solution on the crystalline structure, pasting and rheological properties of common buckwheat starch

Jiale Wang[1], Jiajun Leng[1], Mengru Han[1], Jinfeng Gao[1]

(*[25]Northwest A & F University, Yangling 712000, China*)

Abstract: 【**Objective**】Selenium is an important element that affects human growth and development, and also affects the yield and quality of common buckwheat. The purpose of this study is to determine the effects of different selenium solutions on the physicochemical properties of common buckwheat starch. 【**Method**】Two common buckwheat varieties were sprayed with different concentrations (0 g/hm2, 5 g/hm2, 20 g/hm2) of sodium selenite solution at the initial flowering period and the full flowering period. 【**Result**】With increasing selenium levels, the amylose content, peak viscosity, breakdown, relative crystallinity, pasting temperature and gelatinization enthalpy first decreased and then increased, while the transparency showed a trend of increasing and then decreasing. All samples exhibited a typical A-type pattern, while at high selenium level, the degree of short-range order of common buckwheat starches changed. From the rheological properties, it can be seen that the starch paste is dominated by elastic properties, while the low selenium treatment decreases the viscosity of the starch paste. 【**Conclusion**】These results showed that spraying different concentrations of selenium solutions at different periods significantly affected the physicochemical properties of common buckwheat starch.

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Jiale Wang, E-mail：le80854634@126.com