Application of optical methods to assess the composition of dried an

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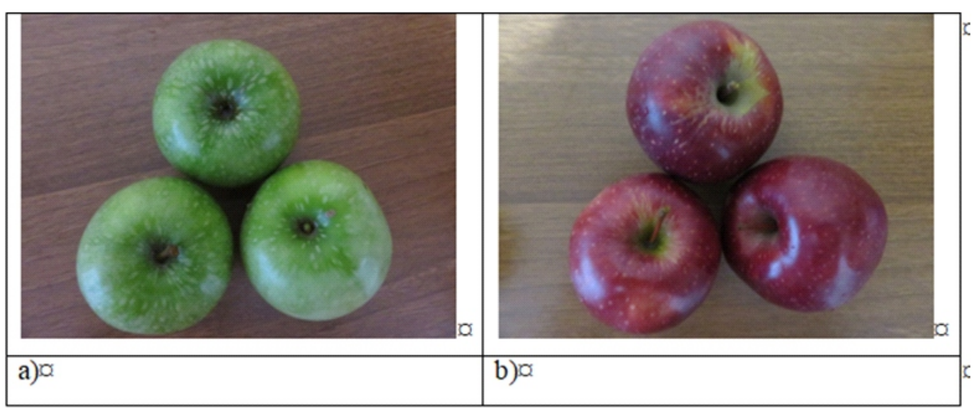


Figure 1 – Objects of research:
a - variety of green apples "Kuibyshevsl
b - variety of red apples "Konfetnoye"

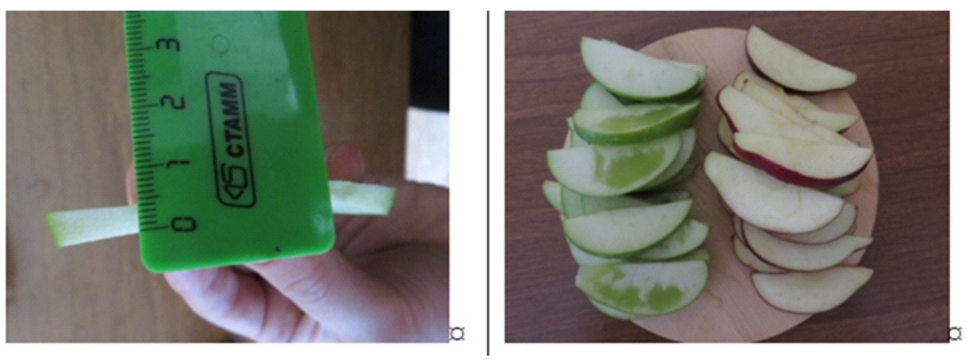
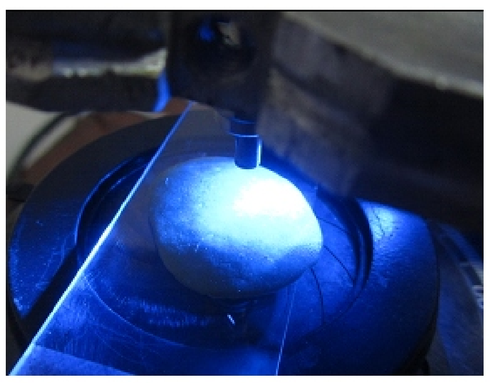
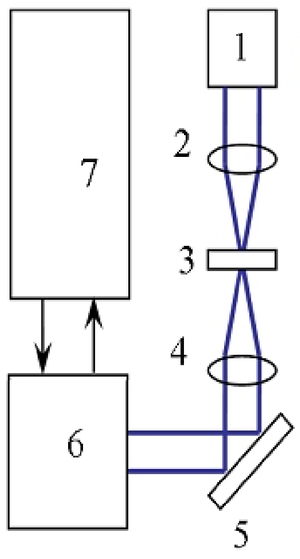


Figure -2 Experimental method

Optical methods



a) Fluorescence analysis

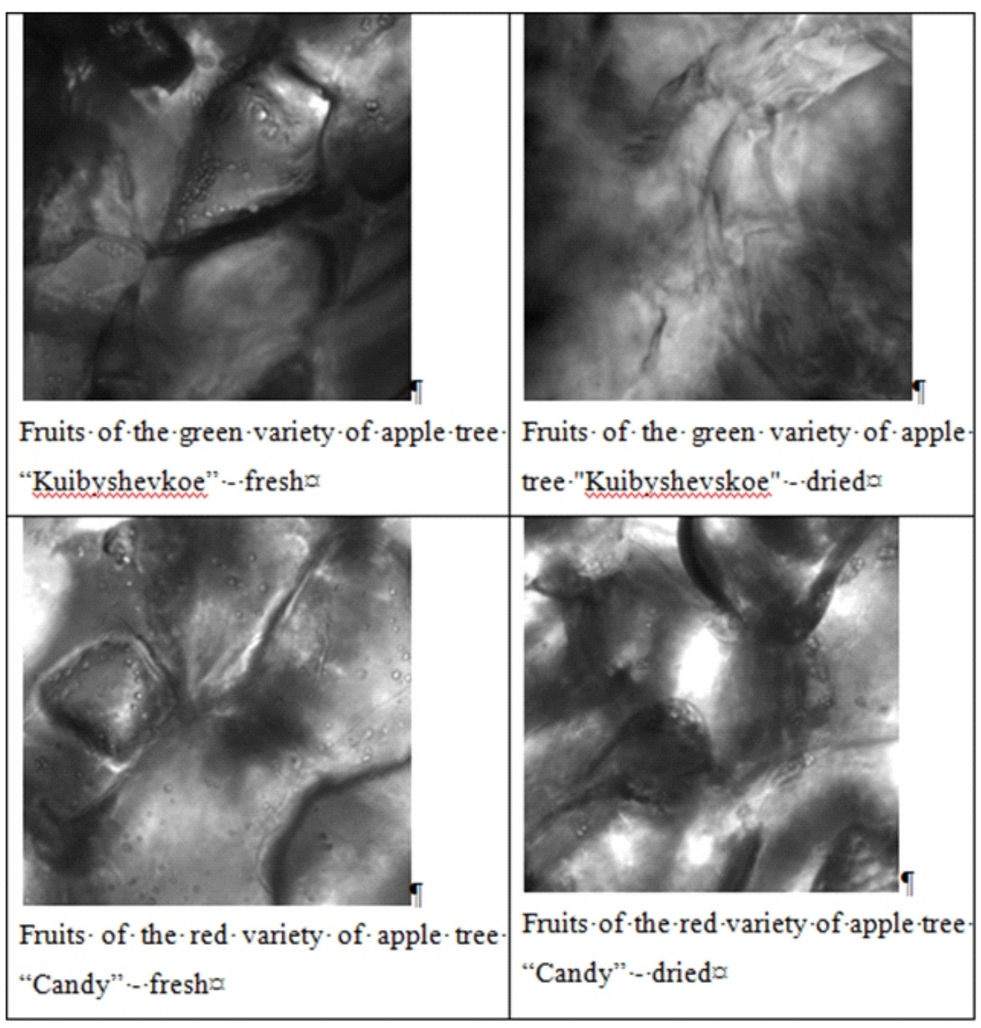


b) Confocal fluorescence analysis:

1 - halogen lamp,
2 - condenser,
3 - object,
4 - lens,
5 - swivel mirror,
6 - camera,
7 - computer.

Figure 2 - Experimental stands

Microscopic analysis



Fruits of the green variety of apple tree "Kuibyshevkoe" - fresh

Fruits of the green variety of apple tree "Kuibyshevskoe" - dried

Fruits of the red variety of apple tree "Candy" - fresh

Fruits of the red variety of apple tree "Candy" - dried

Fluorescence analysis

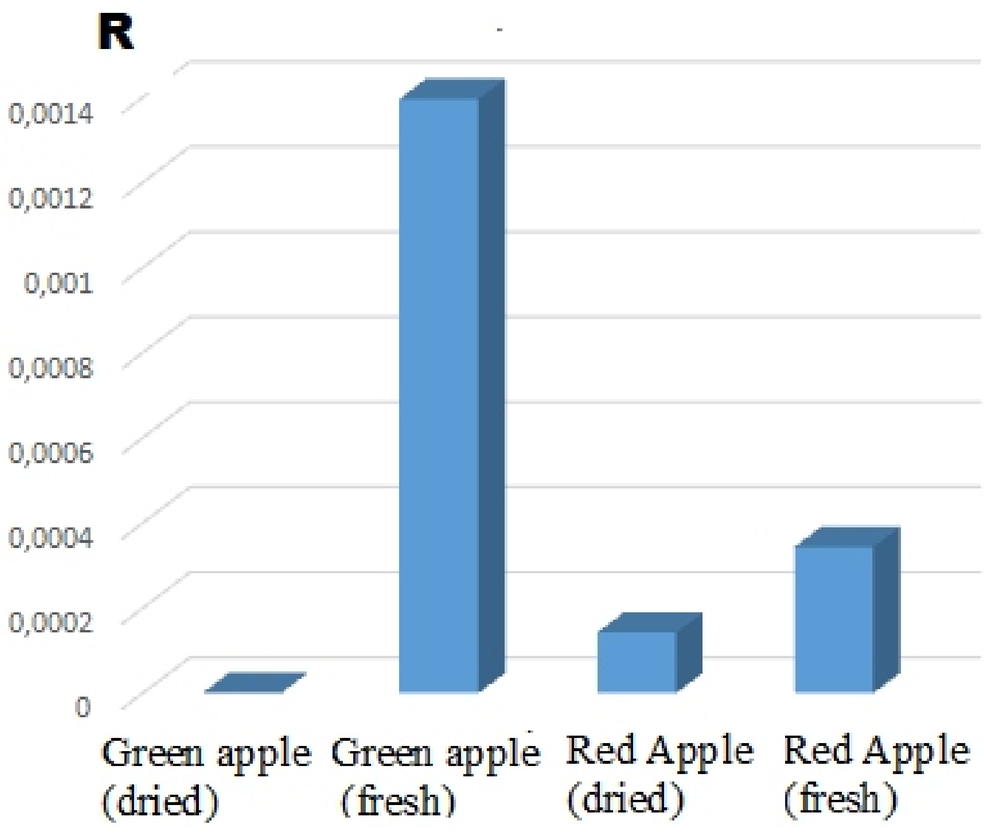


Figure4 – Dependence of the coefficient R
before and after drying the studied apple fru

Optical coefficient

$$R = I_{685}/I_{469}$$

Conclusions

1) As a result of experimental studies, an optical parameter was introduced that characterizes the beneficial properties of apples. It has been shown that the drying process leads to the loss of beneficial properties of green apples. While in red varieties of apples the beneficial properties are preserved, which was established using the introduced optical coefficient.

2) Microscopic analysis of the studied apple fruits in fresh and dried form showed that in the dried state, the cell structure of green apple varieties is not preserved, chlorophyll is absent, and therefore useful substances are not preserved, as in red apples.