STUDIES REGARDING SOME BIOCHEMICAL COMPOUNDS INVOLVED IN CHERRY COMPATIBILITY

STUDII PRIVIND CONTINUTUL IN DIFERITE SUBSTANTE BIOCHIMICE CU ROL IN AFINITATEA CIRESULUI PE DIFERITI PORTALTOI

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Abstract: *The grafting success at cherry is dependent on the compatibility degree of the grafting partners, a lot of biochemical compounds playing a special role. In this paper we refer at the flavonic, polifenolic, triterpenic and sterolic compounds TLC (Thin Layer Chromatography) analyzed. The samples were represented by the woody parts drew out from the 2 cm upper and under the grafting point, through the grafting point and from the roots. The chromatographic analyses showed differences regarding the presence or the absence of some biochemical compounds in the analyzed plant fragments, which indicate the different compatibility degree of the used rootstocks.*

For cherry, the compatibility between scion and rootstock was and remains a problem in the success of grafting. The failure of the grafting, respective the incompatibility could have many causes such as: the morph anatomical and genetic differences between the scion and the rootstock, the biochemical composition of the grafting partners and many others. The researches made upon the cherry compatibility with the interspecific cherry rootstocks used in order to reduce the cherry vigor showed that a lot of biochemical compounds are directly involved in that complex process.

MATERIALS AND METHODS

The biological material was represented by four interspecific cherry hybrids, respectively IPC 3-7 *(Prunus subhirtella x Prunus pseudocerasus)*-V1, IPC 1-6 *(Prunus subhirtella x Prunus canescens)*-V2, IPC 5-0 *(Prunus pseudocerasus x Prunus incise)*-V3, IPC 6-8 *(Prunus incisa x Prunus subhirtella)*-V4 and as control was used a selection of *Prunum avium L.*-V5. Those rootstocks were grafted with the Van variety as scion. The samples were represented by the fragments situated upper the graft point (T), through the graft point (A), under the graft zone (SA) and by the root system (R) of each of those combinations. Those fragments were grinded; the dichloromethane extracts were obtained after 48 h of soak at the room temperature (20^0C), the obtained extracts were analyzed using thin-layer chromatography (TLC) method.

RESULTS AND DISCUSSIONS

The analyze of the flavonic and polifenolic compounds.

The thin-layer chromatography realized from the vegetal material shows changes of the biosynthetic specter. As TLC controllers were used: quercetol (Cv), rutozid (R), apigenin (A), luteolin (L), caffeic acid (A.caf.) and chlorogenic acid (A.cl.).

Regarding the samples obtained from the grafting zone (fig. 1), it was observed that luteolin is present at all variants, the caffeic and chlorogenic acid in variable amounts depending on the size and the intensity of the spot. There are a series of metoxilate flavones, others than quercetol and rutozid, in variable numbers, and at the IPC 5-0 none. It is notable that the polifenolic compounds dominate the flavonic ones.

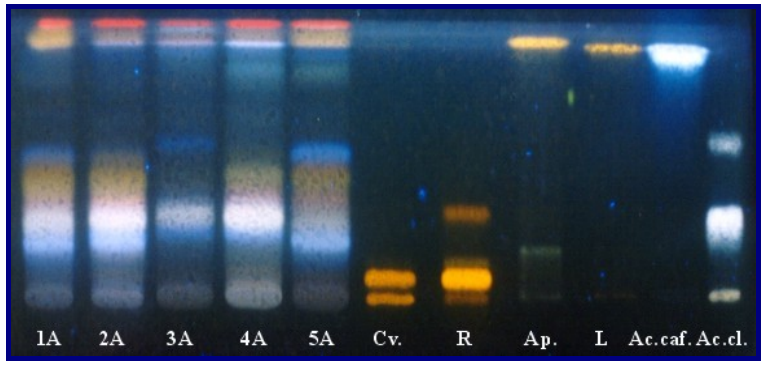

Fig. 1 Chromatography for flavonic compounds through the grafting poin

Samples from the upper grafting zone were not synthesized the luteolin, apigenin and caffeic acid. It is present the chlorogenic acid. The metoxilate flavones are in number of two at each one of variant. The biosynthesize is lead to the polifenolic compounds.

Under the grafting zone it was observed the presence of the chlorogenic acid and the miss of the caffeic acid at all variants (fig. 2). The ferulic and caffeic acid is present only at the control *(Prunum avium)* (intense blue spot) and only at the IPC 3-7 is present the apigenin.

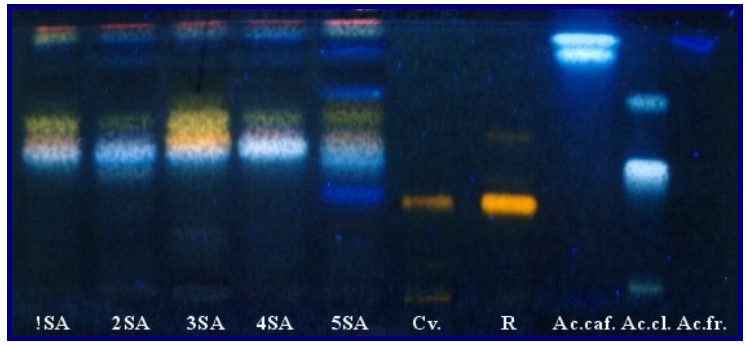

Fig. 2 Chromatography for polifenolic compounds under the grafting zone

Concerning the roots samples, it wasn't identified flavones used as control. Other three flavones are present at the interspecific rootstocks and only one for the control rootstock. The caffeic and chlorogenic acid was identified in different amounts in all variants (fig. 3). The polifenolic biosynthetic specter is identical for the variants (Rf=0,24) and is missing the compound with Rf=0,63.

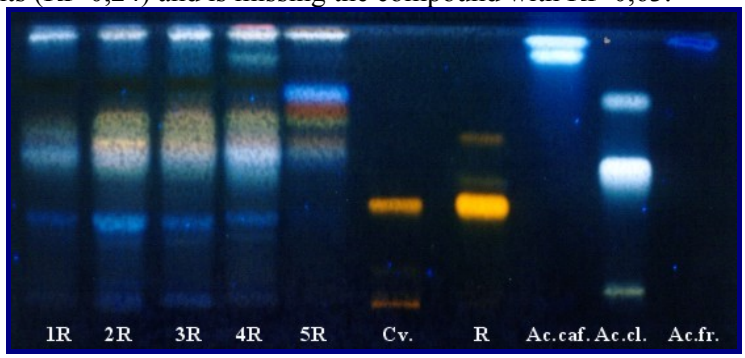

Fig. 3 Chromatography for polifenolic compounds from the roots

The analyze of the triterpenic and sterolic compounds.

It was used the thin-layer chromatography and as TLC controllers the next compounds: cholesterol (C), Beta-sitosterol (β sito), Stigma-sterol (Stg), oleanolic acid (Ac.O) and ursolic acid (Ac.U).

Regarding the samples obtained from the grafting zone, it was observed the presence of the beta-sitosterol in all variants (fig. 4). The ursolic acid is present only in interspecific rootstocks, at the control is missing. The triterpenic compounds are in variable number, the control recording the lowest number (5 triterpenic compounds).

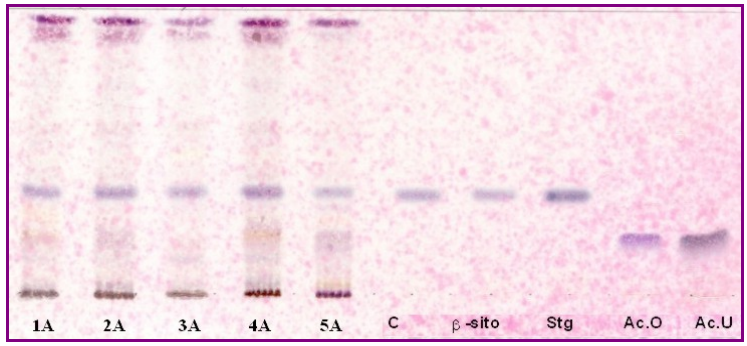

Fig. 4 Chromatography for triterpenic compounds through the grafting point

For the upper grafting point samples, it was identified the oleanolic acid which in none of other parts of plant is present. Also is present the beta-sterol and the ursolic acid.

Under the grafting point, it was synthesized in all variants the beta-sitosterol compound and the ursolic acid at IPC 3-7 and IPC 1-6. Comparative with the upper grafting zone which have 8-9 compounds, the samples from the under grafting zone have only 4 compounds at the IPC 5-0, IPC 6-8 and control.

From roots the lowest number of compounds it was recorded by the control, which contains the beta-sterol compound. The ursolic acid is present only at the interspecific rootstocks (fig. 5). Those variants have the same nine triterpenic and sterolic compounds. It wasn't identified the oleanolic acid.

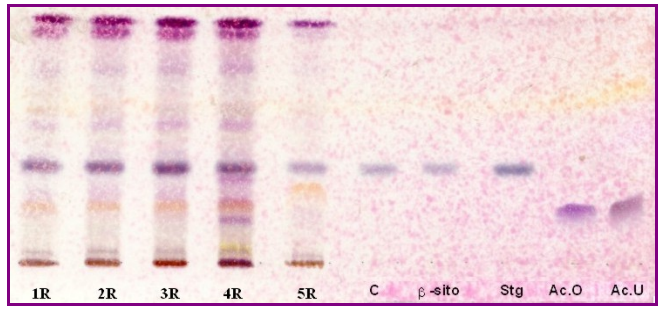

Fig. 5 Chromatography for triterpenic compounds from the roots

CONCLUSIONS

The biochemical analyses made for the interspecific cherry hybrid rootstocks emphasize:

1. The chlorogenic acid was identified in all variants in different amounts.
2. The luteolin is present in all variants at the graft level and is missing upper the grafting point.
3. The caffeic acid is present in different amounts in the root system.
4. The biosynthesis is lead to the polifenolic compound and less to the flavonic ones.
5. The Beta-sitosterol compound is present in all studied samples.
6. The oleanolic acid is present only upper the graft point
7. The number of the triterpenic compound are bigger in the upper zone than the under zone, the control recorded the lowest number of triterpenic compounds.

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