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## ABSTRACT

The researches aimed to accomplish the extraction with supercritical carbon dioxide of sulphur compounds from local plants of the *Allium* genus. The thin layer chromatography enabled the qualitative identification of thiosulfinates (with  $R_f = 0.201 - 0.486$ ), diallyl thiosulfinate (with  $R_f = 0.458$  on the *Allium ursinum* L. extracts) and dipropyl thiosulfinate (with  $R_f = 0.486$  on the *Allium cepa* var. "Rubiniu" extracts, highlighted through a light brown spot).

## MATERIAL AND METHODS

The most popular Romanian *Allium* spp. (*Allium cepa* var. "Rubiniu" – red onion) was kindly supplied by Research & Development Society for Vegetables (SCDL) Buzău, Romania. The *Allium ursinum* L – wild garlic leaves were collected from Bacau forests in 2011 May. All of the raw materials were free of external damages and hand selected, cutting using a kitchen knife for their following analysis.

### Supercritical fluid extraction

Equipment used for supercritical fluid extraction (Fig. 1) of solid material was designed and supplied by Natex Prozesstechnologie GmbH (Ternitz, Austria, [www.natex.at](http://www.natex.at)).



Fig. 1. Experimental plant for supercritical fluid extraction (Courtesy of Natex).

### Thin Layer Chromatography for identification of sulphur compounds

Thin Layer Chromatography was performed according to Wagner și Blatt, (1996) after the dissolving of the extracts in methanol (0.05 g solid extract to 30 mL of methanol) and spotted on chromatographic silica gel plate 60 F254 (MERCK, Germany).

The developing system was toluene – ethyl acetate (10:3) (Fig.3a). The detection of the sulphur compounds was possible with detection system (1 g vanillin to 100 mL acetic acid) (Fig.3b).

## RESULTS AND DISCUSSION

### Humidity content of solid material

The AOAC (2000) specifications were adopted to establish the humidity of wild garlic dried leaves and lyophilized red onion (fig.2).

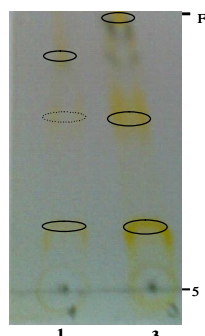


Fig. 3a. Toluene – ethyl acetate system

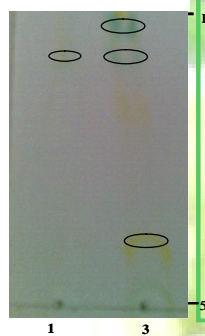


Fig. 3b. Detection system (vanillin – acetic acid)

1 – *Allium cepa* var. "Rubiniu" 3 – *Allium ursinum* L.

### TLC identification of sulphur compounds

After impregnation in developing system toluene – ethyl acetate (Fig.3a) were identified the thiosulphates ( $R_f = 0.201 - 0.486$ ), diallyl thiosulphate with  $R_f = 0.458$  in wild garlic extract.

The dipropyl sulphate ( $R_f = 0.486$ ) was characteristic for red onion extracts in small concentration (grey line).

After developing solution treatment, were observed yellow spots (for thiosulphate) and blue-grey (for sulphides) in the case of wild garlic extracts (Fig. 3b).

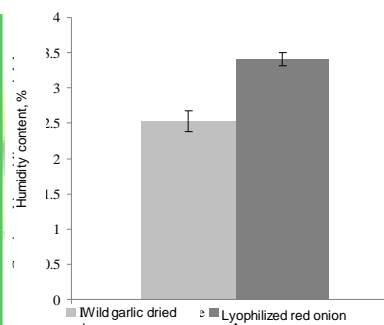


Fig.2. Water content of solid material used for supercritical extraction (values are mean of two parallel determination  $\pm$  standard deviation)

## CONCLUSIONS

- The humidity content of lyophilized red onion was 3.409% with 25.79% much higher than humidity of dried wild garlic leaves.
- The Thin Layer Chromatography allow us to identify the sulphur compounds like: thiosulphates (with  $R_f$  between 0.201 and 0.486), diallyl thiosulphate with  $R_f = 0.458$  for *Allium ursinum* L. extracts and dipropyl thiosulphate (in small concentration) (with  $R_f = 0.486$  for *Allium cepa* var. "Rubiniu")

## ACKNOWLEDGMENT

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