Phytochemical variability of common tansy, an interesting species for veterinary medicine

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Introduction

Common tansy (*Tanacetum vulgare* L.) is a perennial, herbaceous flowering plant of the aster family, native to temperate Europe and Asia. Common tansy is mentioned in the literature as a plant with de-worming properties for livestock (Waller *et al*., 2011). Its use in commercial products is also reported (Valchev *et al*., 2009). However, only few studies have been devoted to the domestication and cultivation of this perennial species.
The aim of this project was to analyse the phytochemical variability present within common tansy.

Material and method

Plantation: 2.8 plants /m^2 planted in July 2004, 30 plants per accession, Conthey, CH.
Treatments: 27 accessions, (10 plants per accession analysed), harvest 2005.
Analysis: hydrodistillation of leaves and flowers, composition of esssential oil by SPME/GC.

Results

Significant differences between the accessions were recorded, such as the essential oil content of the leaves and flowers varying from 0.30 to 1.39 % (v/w).
High variations of the contents of several molecules in the essential oil such as α-thujone (0-86%), β-thujone (0-96%), chrysanthenone (0-82 %), lyratol (0-55%) and umbellulone (0-36%) were also observed (Table 1). This high variability concerning the composition of the essential oil is a valuable basis for a breeding program.
Important knowledge was also gained for breeding and cultivation of common tansy (floral biology, harvesting stage, pests, yields, location, cultivar rich in β-thujone).

Table 1. Mean composition of the essential oil of 27 accessions of common tansy and in brackets variability within an accession (min.-max.). Harvest stage: very beginning of flowering. (– indicates no detection of the molecule).

Acces-sions	Origin of the seeds	α-thujone (%)	β-thujone (%)	chrysan-thenon (%)	lyratol (%)	umbel-lulone (%)
TV-1	CH	-	**36** (0-70)	-	-	-
TV-2	CH	-	**49** (11-87)	-	-	-
TV-4	D	-	**88** (63-97)	-	-	-
TV-5	F	-	**13** (0-40)	**3** (0-16)	**5** (0-55)	**4** (0-12)
TV-6	DK	-	**20** (0-83)	-	-	**8** (0-32)
TV-7	HU	-	**11** (0-29)	-	-	-
TV-8	N	-	**19** (0-50)	-	-	**25** (12-36)
TV-9	B	-	**49** (11-92)	**25** (0-70)	-	**1** (0-6)
TV-10	D	-	**48** (0-80)	-	-	-
TV-11	CND	**2** (0-25)	**2** (0-23)	-	-	**7** (0-29)
TV-12	CND	-	**34** (0-93)	-	-	-
TV-13	D	-	**36** (0-67)	**5** (0-29)	-	-
TV-14	D	-	**20** (0-59)	-	-	-
TV-15	D	**19** (0-61)	**31** (0-71)	**9** (0-64)	-	-
TV-17	D	-	**11** (0-30)	**4** (0-26)	-	-
TV-19	RO	-	**5** (0-21)	**8** (0-82)	**5** (0-51)	-
TV-20	CH	-	**82** (27-94)	-	-	-
TV-23	D	-	**14** (0-93)	-	**22** (0-49)	-
TV-24	F	-	**45** (0-95)	-	-	-
TV-25	F	-	**24** (0-85)	-	**21** (0-42)	**4** (0-12)
TV-26	CH	-	**84** (11-96)	-	-	-
TV-28	CH	-	**31** (0-85)	-	-	-
TV-34	CND	-	**94** (89-96)	-	-	-
TV-35	CH	-	**92** (79-96)	-	-	-
TV-36	CH	**16** (0-55)	**1** (0-5)	-	-	-
TV-37	CH	**38** (0-86)	**17** (0-95)	-	-	-
TV-38	CH	-	**6** (0-18)	-	-	-

Conclusions

- A high variability between and within accessions, especially concerning the composition of the essential oil was recorded.
- This high variability is a valuable basis for a breeding program to develop a cultivar well adapted for veterinary medicine.

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