

### Thymol as pesticide? Efficiency and residues

Prof Karl Speer, Mr Stephan Becker, Mrs Gesche Schoett  
*Technical University Dresden, Food Chemistry*

Thymol, the main component in *T. vulgaris*, was included in the implementing regulation (EU) Nr. 568/2013 for the use as fungicide since December 2013. The use of thymol as fungicide is especially attractive in fruit cultivation. Post-harvest treatments of plums, cherries or apricots revealed a good efficacy of thymol on grey mold (*Botrytis cinerea*) and fruit rot (*Monilina fructicola*) [<sup>1-3</sup>]. However, only few literature on field test are available. Therefore, the effect of a thymol treatment on yield and efficiency should be investigated in a field experiment on Pinova apples. Additionally, the apples were tested sensorial and analytical for thymol residues.

For the field experiment, an apple plantation was arranged in four rows and during the growing season the rows were treated with a spray of thymol in a concentration of 0.5 g/l every two weeks. To evaluate the effectiveness of the treatment, the health of the apples was visual examined when the fruits were ripe. No significant differences to the control group were visible, also the number and the weight of the fruits remained unaffected.

In the peel as well as in the pulp obvious residues were detected by HS-GC-MS and HS-SPME-GC-MS. Immediately after harvest, all samples exceeded the threshold, applicable until 2015, of 0.01 mg/kg. During the four week storage, which is usual for Pinova to the formation of the eating ripeness, the thymol content decreasing. However, only the peeled apples contained less than 0.01 mg/kg.

With the regulation (EU) 2015/896, the European Union included thymol temporarily in Annex IV of the Regulation (EG) Nr. 396/2005. This means that for thymol a maximum residue level of 0.01 mg/kg is no longer actual. Consequently, the treated apples were tradable.

[<sup>1</sup>]Chu, Liu, Zhou, Tsao. Can. J. Plant Sci. 1999: 79

[<sup>2</sup>]Liu und Chu. Hort Sci. 2002: 37

[<sup>3</sup>]Tsao und Zhou. Hort Sci. 2000: 35