# The Constituents of the Wood of *Thuja occidentalis* L.

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The occurence of three isomeric thujaplicins and thujic acid in the heart-wood of *Thuja plicata* has been announced earlier [1, 2]. The three thujaplicins are highly toxic towards wood destroying fungi and are mainly responsible for the high durability of this wood. It was therefore of interest to investigate whether other species of the same genus also contain these substances. Such an investigation has now been carried out on the wood of *Thuja occidentalis*. This species is endemic to eastern North America and is grown in Northern Europe as an ornamental tree in parks and churchyards. It is known for the great age it can attain. The samples of the wood used were kindly supplied by Mr. K. G. Karlsson from Svartå gård in Southern Finland.

Extraction of the finely-divided wood with acetone and treatment of the extract in the manner already described for *Thuja plicata* [1], yielded $\alpha$- and $\gamma$-thujaplicin in 0.08 and 0.008 percent yield respectively, whereas thujic acid was found only in traces. The substances were identified by mixed melting point determinations with authentic samples obtained from *Thuja plicata*. No $\beta$-thujaplicin could be detected, but its presence in small amounts cannot be excluded due to the difficulty in separating the thujaplicins.

The high percentage of $\alpha$-thujaplicin and the relatively low percentage of $\gamma$-thujaplicin is remarkable when compared to *Thuja plicata*, where they occur in approx. equal amounts. It is also striking that *Thuja occidentalis* contains very little thujic acid, which is the main constituent of the heart-wood of *Thuja plicata*.

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It is seen from the steady decrease in limit DP for pulps cooked to decreasing viscosity, that part of the mesomorphous areas is also attacked by the action of acids, at least at higher temperatures.

It is obvious that the proposed variations in lateral order and the large extension of the transitional or mesomorphous areas of wood pulp fibers will greatly influence the behaviour of these fibers in acid hydrolysis and in other chemical reactions, which involve no or little swelling of the material. It also points to the importance of defining the prehistory and refining procedures used for pulp fibers which are to undergo such reactions.

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