

PP58. The effect of steam distillation time on the yield and composition of the oil from *Kunzea ambigua*

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Kunzea ambigua (Sm.) Druce (Myrtaceae), commonly known as 'Tick Bush' is a woody shrub, indigenous to Australia and New Zealand. It thrives in the granite soils of the north-east coast and Bass Strait islands of Tasmania. The therapeutic and antimicrobial properties of the essential oil have been documented [1,2]. The nature of the small, leathery leaves necessitates a long distillation time to achieve maximum oil yield. Oils were collected at set distillation times of 1, 3, 5, 10, 30, 60, 90, 120, 150, 180, and 240 mins. Yields and chemical compositions were determined by GC FID and identification of components was confirmed by Kovats Indices and mass spectra. Although the distillation of monoterpenes contributed to the most rapid phase of oil accumulation, which occurred at around 30 minutes, the narrow, lanceolate leaves of *K. ambigua* required in excess of 4 hours for complete extraction of the heavier components. The concentration of oxygenated monoterpenes, such as terpinen-4-ol and α -terpineol, had peak oil recovery at between 30 and 60 minutes. Recovery of 1,8-cineole maximized at 30 minutes, following a similar pattern to the monoterpenes. The cyclic ether component of this oxygenated monoterpene may well contribute to the different behavior under the conditions of steam distillation. In contrast, increasing amounts of the oxygenated sesquiterpenes, globulol and viridiflorol accumulated with time and it may be assumed that the complete extraction of essential oils from the vegetative material was not achieved. Both components are regarded as integral to the aroma, contributing a floral/citrus element to the bouquet of the typical *Kunzea* oil [3]. Oils containing higher ratios of these heavy components may be achieved by combining fractions collected onwards from one and a half hours into the steam distillation process. This enhanced the percentage of globulol from 17 \pm 3 in the unfractionated, total oil yield to 27 \pm 4 in the 46% of the oil collected in the later stages of the distillation. Likewise, the percentage of viridiflorol can be increased from 10 \pm 2 to 17 \pm 2%. Research is continuing into shortened distillation times using super-heated steam and into the antibacterial and antifungal properties of the oil of *K. ambigua*.

References:

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