Pick Your Poison. Isolation of Paclitaxel.

The diterpenoid, paclitaxel, which was identified as a potent chemotherapy agent for breast and ovarian cancer originates from the Pacific Yew tree. Though the life-saving compound was initially found in the bark, its presence was later confirmed in every part of the tree excluding the fruit.[1] Paclitaxel, is a member of the taxane family and has been associated with the highly toxic nature of the *Taxus* genus.[2] Paclitaxel was discovered to inhibit mitosis in tumor cells and other fast growing cells through the binding of microtubules.[3] This behavior led to its use as a tumor suppression agent. The isolation of paclitaxel from its major impurities is shown below with the use of Hamilton's PRP-1 (5 µm) HPLC column.

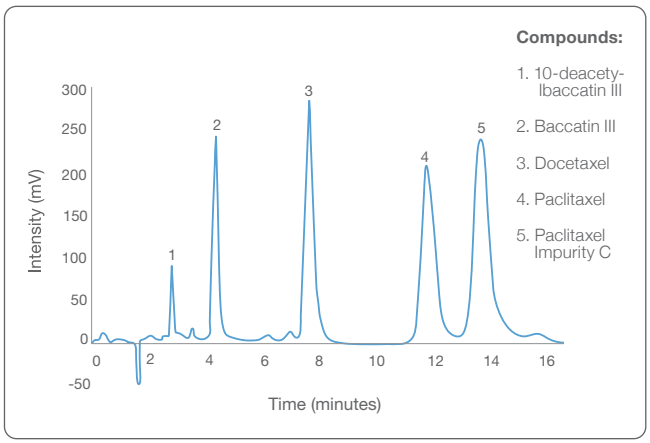
The isolation of paclitaxel was achieved by utilizing a sodium citrate buffer with a concentration of 20 mM at pH 6.0. The aqueous modifier promotes a stronger interaction between the analytes and the highly lipophilic resin. Complete baseline separation was observed using a 0.75 mL/minute flow rate at 35°C. While other HPLC methods employ a 250 x 4.6 mm HPLC column, we were able to reduce the column dimensions to 150 x 4.1 mm to facilitate a faster method while still maintaining good peak shape and resolution. Scale-up is easily accomplished due to Hamilton Company's proprietary stationary phase which can tolerate large sample loads without sacrificing peak shape, resolution or exhibiting carryover peaks.

Column Information

Packing Material	PRP-1, 5 µm
P/N	79444

Chromatographic Conditions

Gradient	Isocratic
Temperature	35°C
Injection Volume	5 µL
Detection	UV at 230 nm
Dimensions	150 x 4.1 mm
Eluent A	1:1 20 mM citrate pH 6:ACN
Flow Rate	0.75 mL/min.



1) *Wilson, C., Hooser, S. Toxicity of Yew Alkaloids,Veterinary Toxicology (Third Edition), Academic Press, 2018, 66, 947.*

2) *Muggia, F.; Kudlowitz, D. Anti-Cancer Drugs, 2014, 25 (5), 593.*

3) *Cortes, J.; Vidal, M. Breast Cancer Res. Treat. 2012, 133 (3), 821.*

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