

B-111: Comparison of chemical composition of local black pepper (*Piper nigrum* L) with introductions (Panniyur and Kuchin)

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The quality of black pepper mainly depends on the pepper oil content and its chemical composition. A wide variability of pepper oil content exists among the local pepper vines. In order to find out the variability of pepper oil content and its chemical composition, a survey was carried out by collecting over 70 local pepper samples from different climatic zones. Samples from 2 introductions i.e., Panniyur (India) and Kuchin (Malaysia) were also collected. In 1983 Jansz *et al.*, reported chemical composition of Sri Lankan pepper oil. However no comparisons were made between local and introductions. The present study represents results from both local and introductions. The pepper berries samples collected from different climatic zones were steam distilled to

obtain the pepper oil. The chemical composition was determined by Gas Liquid Chromatograph (GLC). Average oil yields are presented in Table 1.

Table 1. Average oil yields of black pepper

Section/cultivar	% of oil (v/w)
Local	3.55
Panniyur	2.03
Kuchin	1.60

The percentages of pepper oil content of local selections and introductions differed significantly (Table 1). The highest percentage of pepper oil was from local selections and it varied from 2.3 to 5.6. The pepper oil content of local pepper was about 2 times higher than the introductions.

The GLC analysis of pepper oil revealed that it was a mixture of over 50 individual chemicals. For the present study 7 major chemicals were selected, as indicated in Table 2.

Table 2. Percentages of major chemical compounds in black pepper (average of 3 replicates)

Compound	Local	Panniyur	Kuchin
α -Pinene	14.20	13.0	6.70
β -Pinene	10.70	14.10	11.0
Sabinene	16.10	13.10	21.40
α -Phellandrene	6.80	8.19	5.45
Limonene	15.30	21.30	22.10
β -Phellandrene	2.40	1.01	0.26
β -Caryophyllene	12.70	12.80	11.70

The major constituents of pepper oil such as α -Pinene, Sabinene and Limonene varied among the local and the 2 introductions whereas β -Caryophyllene showed a similar percentage. These major constituents could modify the final note in flavour. For example concentration of higher Limonene could give a higher lemon flavour. The percentage of Limonene was higher in Panniyur and Kuchin compared to local pepper. This study showed that the composition of pepper oil of local pepper has remained unchanged since the last report Jansz *et al.*, (1983).

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