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Survey on cannabis resin and cannabis in unsmoked handrolled cigarettes seized in the Republic of Ireland

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A total of 2204 unsmoked handrolled cigarettes were analysed for cannabis resin/cannabis content over the period 1980 to 1996. Of these, 2025 contained cannabis resin and 179 contained cannabis. The average weight of cannabis resin found from the analysis of the 2025 cigarettes was 102 milligrams. The average weight of cannabis found from the analysis of the 179 cigarettes was 260 milligrams.

Un total de 2204 cigarettes non fumées, roulées a la main a été analysé pour déterminer leur contenu en résine de chanvre ou en chanvre durant une période allant de 1980 a 1996. De la résine de chanvre se trouvait dans 2025 cigarettes et du chanvre dans 179 cigarettes. Le poids moyen de résine trouvé par l'analyse des 2025 cigarettes était de 102 milligrammes. Le poids moyen de chanvre trouvé par l'analyse des 179 cigarettes était de 260 nulligrammes.

Von 1980 bis 1996 sind insgesamt 2204 nicht gerauchte, handgedrehte Zigaretten auf ihren Gehalt an Cannabis Harz bzw. Cannabis untersucht worden. Von diesen enthielten 2025 Cannabis Harz und 179 Cannabis. Im Durchschnitt wurden in den 2025 Zigaretten 102mg Cannabis Harz und in den 179 Zigaretten 260mg Cannabis gefunden.

Se analizaron un total de 2204 cigarrillos hechos a mano para ver su conienmdo en resina de cannabis y/o cannabis a lo largo del periodo 1980-1996. De ellos, 2025 contenian resina de cannabis y 179 contenian cannabis. El peso medio de resina de cannabis encontrado en el analisis de los 2025 cigarrillos fue 102 miligramos. El peso medio de cannabis encontrado en el analisis de los 179 cigarrillos fue de 260 miligramos.

Key Words: Forensic science; Drugs of abuse: Cannabis resin; Cannabis; Cigarettes; Republic of Ireland.

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Introduction

The most common offences brought before the courts, under the Misuse of Drug Acts, 1977 and 1984[1.2] in relation to controlled drugs in the Republic of Ireland are 'possession' and 'possession for sale or supply' charges.

In the case of offences involving drugs which have a therapeutic use but are also being abused, the therapeutic dose may be taken into account when deciding on whether a person has a particular quantity of drugs for his/her own use or for supply to others. With cannabis products, however, there are no such recognised therapeutic doses. In the UK courts, estimates of the number of cigarettes that may be made from a quantity of seized cannabis products are frequently used to help distinguish possession from possession for sale or supply [3]. In order to assist the courts in the Republic of Ireland in determining whether the amount in question is for 'immediate personal use' or for supply, a survey was initiated to determine the quantities of cannabis resin or cannabis in handrolled cigarettes. The average weights obtained from the survey allows a determination of the number of handrolled cigarettes that could be produced from a given quantity of cannabis resin or cannabis. The number of cigarettes that could be consumed by a user also depends on other factors, which include the experience of the user and the delta-9-tetrahydrocannabinol (THC) concentration of the cannabis products. The THC content of the cannabis products separated from the cigarettes in our survey was not determined as it was in a previous publication [4] where only 36 cigarettes were analysed (of which 22 contained cannabis and 14 contained cannabis resin).

While the survey is ongoing, the results presented in this paper pertain to the years 1980 to 1996. The results of our survey supplement previously published data [5] on the cannabis resin and cannabis content of unsmoked handrolled cigarettes.

Method

The cannabis resin or cannabis present in unsmoked handrolled cigarettes was separated under magnification (using a Carl Zeiss OPMI 1 episcopescope or similar) from its mixture with tobacco prior to weighing. The collected material was weighed (using a Mettler balance AE240) and the weights were then entered into a database. If there was more than one handrolled cigarette in the same case then it was treated as a separate entry. Handrolled cigarettes containing both cannabis resin and cannabis were not used in this survey, nor were handrolled cigarettes containing cannabis only (and no tobacco).

The material was analysed using thin layer chromatography (TLC plates MERCK Silica Gel 60 F₂₅₄; Mobile phase hexane: diethyl ether 4:1 – visualisation was obtained with Fast Blue BB (Sigma)) and identified with microscopy using a Carl Zeiss Jena or a Reichert Austria Nr. 302 750 microscope. The microscope slides were prepared using chloral hydrate, or Duquenois reagent and concentrated hydrochloric acid.

The cannabis resin standard was prepared from the following mixture of materials: 50 ul of A-9-tetrahydrocannabinol, 500 ul of cannabidiol (0.1% solution in ethanol) and 500 ul of cannabidiol (0.1% solution in ethanol). The cannabinoids were purchased from Sigma. The ethanol was removed by evaporation and the mixture reconstituted with petroleum ether. The cannabinoids from the sample material were extracted with petroleum ether.

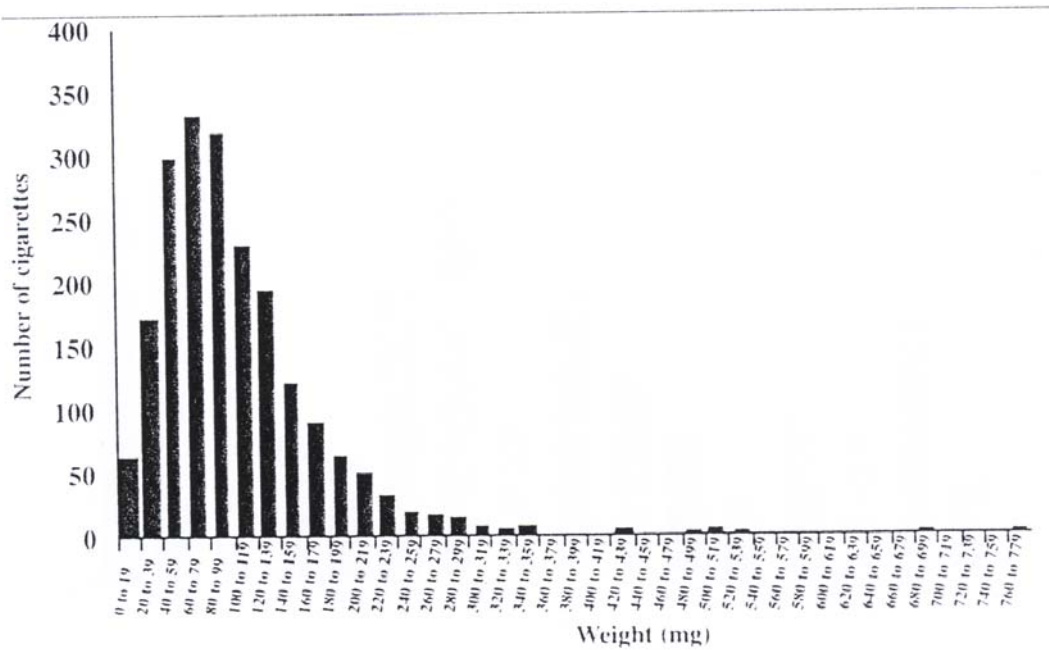


FIGURE 1 Weight distribution (mg) of cannabis resin in 2025 unsmoked handrolled cigarettes.

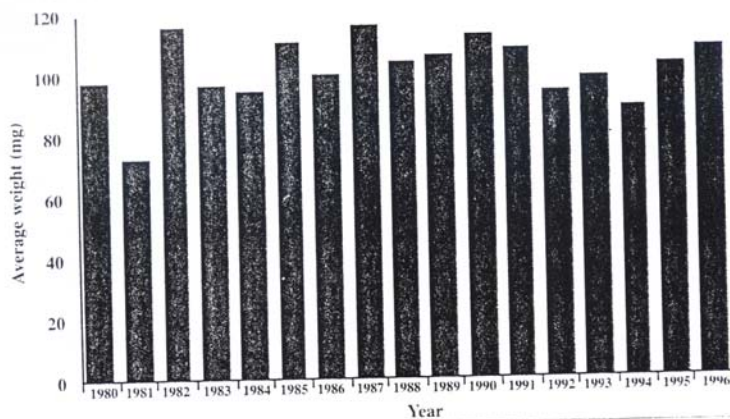


FIGURE 2 Average weight (mg) of cannabis resin per cigarette per year.

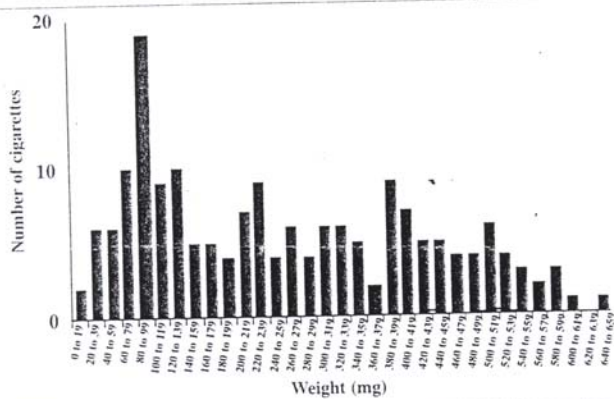


FIGURE 3 Weight distribution (mg) of cannabis in 179 unsmoked handrolled cigarettes.

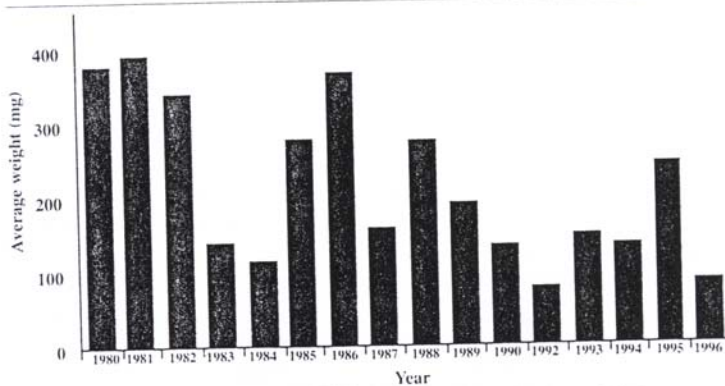


FIGURE 4 Average weight (mg) of cannabis per cigarette per year.

TABLE 1 The average cannabis resin content of unsmoked handrolled cigarettes from different sources.

	<i>No of cigarettes analysed</i>	<i>Average weight Per cigarette (mg)</i>
Dublin FSL 1980–96	2025	102
FSS Chepstow 1979–84	181	136
Humphreys + Joyce 1982[3]	137	188
FSS Wetherby 1993–95	50	157

Results and Discussion

Cannabis resin

The results of the survey showed that the average weight of cannabis resin in the 2025 unsmoked handrolled cigarettes analysed was 102 mg with a range from 1 to 760 mg. The weight distribution for cannabis resin in unsmoked cigarettes is detailed in Figure 1, with 99.0% of values lying within the range from 1 to 319 mg. Figure 2 shows the average weight of cannabis resin per cigarette per year. This average weight has ranged from a minimum of 73 mg in 1981 to a maximum of 116 mg in 1982 and in 1987.

Cannabis

The average weight of cannabis in the 179 cigarettes analysed was 260 mg with a range from 2 to 648 mg. The weight distribution for cannabis in unsmoked cigarettes (Figure 3) shows a much wider variation than that of cannabis resin, with only 62.5% of cigarettes lying within the range from 1 to 319 mg.

Figure 4 shows that the average weight of cannabis per cigarette per year ranged from 78 mg in 1992 to 401 mg in 1981. In 1991, no unsmoked handrolled cigarettes containing cannabis were analysed at this laboratory.

The average weight of cannabis per cigarette per year (Figure 4) shows more variation than the average weight of cannabis resin per cigarette per year (Figure 2). The lack of availability of cannabis on the market may contribute wholly or partially to this variation.

It must also be noted that the population varies from 2025 cigarettes analysed for cannabis resin to only 179 analysed for cannabis. Cigarettes containing cannabis resin are submitted to the laboratory more frequently than those containing cannabis. We would expect that this is a reflection of the ‘street’ situation.

The results of this survey and similar surveys carried out by The Forensic Science Service Laboratories (FSS) at Chepstow and Wetherby (personal communications), and

TABLE 2 The average cannabis resin content of unsmoked handrolled cigarettes from different sources.

	<i>No of cigarettes analysed</i>	<i>Average weight per cigarette (mg)</i>
Dublin FSL 1980–96	179	260
FSS Chepstow 1979–84	55	181
Humphreys + Joyce 1982[3]	54	197
FSS Wetherby 1993–95	18	221

Humphreys and Joyce [5] are summarised in Tables 1 and 2.

Comparing the present survey with other surveys the following observations have been made. The average weight of cannabis resin recovered per cigarette in the other surveys was in each case higher than the present results. The average weight of cannabis recovered per cigarette in the other surveys was in each case lower than the results shown here. In all cases the populations were smaller than in this present survey. The average weight of cannabis per cigarette was in all cases larger than the average weight of cannabis resin in each survey.

Summary

Certificates of analysis issued by this laboratory in relation to cannabis resin or cannabis include a statement outlining the average weight of either drug contained in a typical handrolled cigarette. The number of cigarettes that could be made using the average weight (for 1980-1996 the average weight is 102 mg for cannabis resin and 260 mg for cannabis) from the quantity of drug in question may also be included. This information is then available to the courts to consider along with other factors whether the drug is for personal use or supply.

Acknowledgments

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