



CIBG
*Ministerie van Volksgezondheid,
Welzijn en Sport*

Quality issues and Medicinal Cannabis in The Netherlands

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CIBG; Ministry of Health, Welfare and Sport
The Netherlands

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Reasons for current policy (2003 >)

- Pressure from society (patients, patients groups, parliament) against prohibition of medicinal use;

Existing practice at **that time**: patients use illegal cannabis from Dutch coffeeshops:

- No quality control;
- No medical coaching of patients;
- Patients at the mercy of illicit trade.



OMC - legislation

- The OMC comes under the Ministry of Health, Welfare and Sport;
- An agency according to art. 28 of the Single Convention (UN) and is, to the exclusion of others, authorized:
 - >to import and export medicinal cannabis from the Netherlands;
 - >to sell and deliver it;
 - >to have it available, with the exception of stocks maintained by those who have a license to cultivate, work up and/or convert.
- Medicinal cannabis is a controlled substance and can be prescribed and dispensed.



Pharmaceutical characteristics:

- Pharmaceutical raw material (API);
- Not registered as a medicine;
- Standardized herbal medicinal product;
- Opium Act.

Route of administration / application:

Available on prescription in the pharmacy:

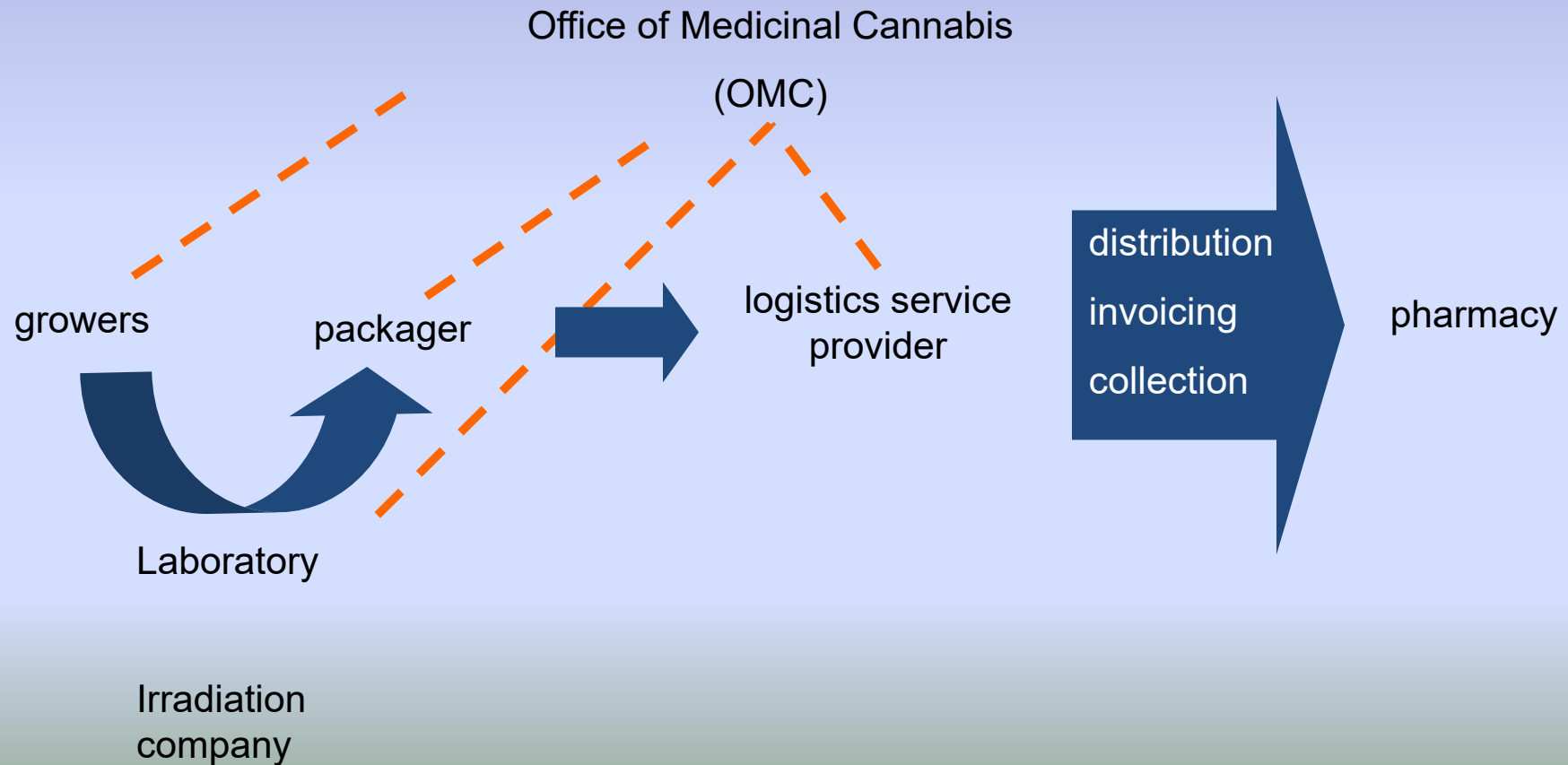
- Inhalation, vaporization;
- Oral application (tea);
- Compounding pharmacies: oil production



Main responsibilities of the OMC

- Ensure constant quality of medicinal cannabis produced which meets pharmaceutical standards;
- Establish an effective procedure for distribution comparable with GDP-rules for registered pharmaceutical products;
- Prevent leakage to the criminal circuit (tracking procedure / recordkeeping);
- Ensure availability of medicinal cannabis.

Production and distribution model





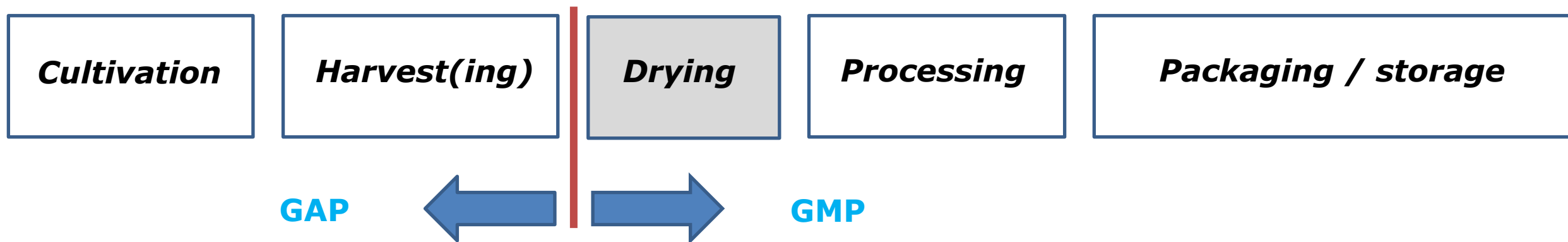
Contracted third parties:

Cultivation	: Bedrocan BV
Packaging and distribution	: Fagron BV
(Gamma) Irradiation	: Steris
Analytics / lab. analyses	: Ofichem Group

Quality covers all parties involved.



Growers and Quality (control)



- Mandatory compliance to GAP-rules and guidelines;
- GMP-certification obligatory; supervised by Dutch Health Inspectorate - OMC;



Logistics – packaging and distribution

- Partner with experience in packaging and labelling of pharmaceutical products as well as raw materials;
- Quality standards and certification: GDP-certified and FDA-certified company;
- Recordkeeping procedure for tracking medicinal cannabis to the patient.



Clean rooms





Laboratory analysis

- › Partner experienced with API's and analytical testing methods;
- › GMP-certification obligatory; supervised by Dutch Health Inspectorate - OMC; (*FDA-audited*)
- › Dutch monograph available; (*concept European Pharmacopeia monograph*)
- › Validated testing methods;
- › Certificate of analysis for every batch tested;
- › Approval by the OMC;



Products – varieties cannabis flos

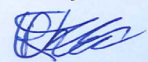
- Cannabis flos, variety **Bedrocan**: 22% THC, <1% CBD
- Cannabis flos, variety **Bedrobinol**: 13,5% THC, <1% CBD
- Cannabis flos, variety **Bedica** granulated: 14% THC, <1% CBD
- Cannabis flos, variety **Bediol** granulated: 6,3% THC, 8% CBD
- Cannabis flos, variety **Bedrolite** granulated: <1% THC, 7,5% CBD

Certificate of analysis

Product:	Bedrocan
Batch number:	A5.01.F.45.190821
Analytical monograph:	OMC Monograph Cannabis Flower / Version 8.0 / November 01, 2021
Analysis number or code:	33905
Report date:	28 December 2021

Test	Method	Specification	Results
Characters			
Odour	EP 2.3.4	Characteristic for cannabis flower	Complies
Appearance	Visual	Leaves do not shoot out more than 20 % of the length of the flower and stalks are mostly cut off directly under the bottom site of the flowers	Complies
Identification			
Identification A	Visual	Brown green clustered flowers of 1.5 to 3.0 cm length	Complies
Identification B	Monograph	Gland hairs are mainly observed	Complies
Identification C	EP 2.2.27	The main spot obtained with test solution has comparable retention time with reference solution and is coloured red (THCA)	Complies
Tests			
Loss on drying	EP 2.2.32	≤ 10.0 %	8.2 %
Foreign material	Visual	Free from insects and other vermin	Complies
Aflatoxins	Monograph	Aflatoxin B ₁	≤ 2 µg/kg < 2.0 µg/kg
		Aflatoxin B ₂	FIO < 0.5 µg/kg
		Aflatoxin G ₁	FIO < 1.0 µg/kg
		Aflatoxin G ₂	FIO < 0.5 µg/kg
		Sum B ₁ , B ₂ , G ₁ , G ₂	≤ 4 µg/kg < 4.0 µg/kg
Pesticides	EP 2.8.13	Conform LOG-0074 V1.0	Not detected
Pesticides screen	Internal method	FIO	Not detected

Quality Control



R. Vree Egberts, BASc

28 DEC 2021

Quality Assurance



R. Schutter, MSc

28 DEC. 2021

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Documentcode: COA-0054	Version: 5.0	Page: 1 / 3	

Certificate of analysis

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Batch number:	A5.01.F.45.190821
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Analysis number or code:	33905
Report date:	28 December 2021

Test	Method	Specification	Results
Tests			
Heavy metals	EP 2.4.27 EP 2.2.58	Lead	≤ 20.0 ppm < 5 ppm
		Cadmium	≤ 0.5 ppm < 0.125 ppm
		Mercury	≤ 0.5 ppm < 0.125 ppm
		Arsenic	FIO < 0.05 ppm
		Nickel	FIO 0.13 ppm
		Zinc	FIO 35 ppm
Assay and Related substances			
Assay	Monograph EP 2.2.29	CBD	FIO < 0.05 %
		CBDA	FIO 0.07 %
		THC	FIO 0.26 %
		THCA	FIO 20.69 %
		CBD total equivalent	≤ 1.0 % 0.1 %
		THC total equivalent	22.0 % [17.6 – 26.4] 18.4 %
Related substances	Monograph EP 2.2.29	CBN	FIO < 0.05 %
		CBNA	FIO < 0.05 %
		CBN total equivalent	≤ 1.0 % < 0.1 %

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Analysis number or code:	33905
Report date:	28 December 2021

Other tests				
Microbial contamination	EP 2.6.12 EP 2.6.13	TAMC	FIO	7.30 x 10 ⁴ cfu / gram
		TYMC	FIO	3.60 x 10 ⁵ cfu / gram
		Staphylococcus aureus	FIO	Absent
		Pseudomonas aeruginosa	FIO	Absent
		Bile tolerant Gram negative bacteria	FIO	< 10 bacteria / gram

This lot complies with the requirements of the current version of the specification sheet and is analysed conform OMC Monograph Cannabis Flower / Version 8.0 / November 01, 2021. The analyses are performed in compliance with EU-GMP.

Before gamma irradiation

Quality Control



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Certificate of analysis

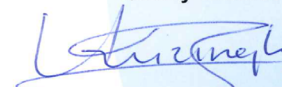
Product:	Bedrocan
Batch number:	21K22EY22B02-381056
Analytical monograph:	OMC Monograph Cannabis Flower / Version 8.0 / November 01, 2021
Analysis number or code:	36488
Report date:	05 May 2022

Test	Method	Specification	Results
Other tests			
Microbial contamination	EP 2.6.12 EP 2.6.13	TAMC	≤ 10 ² CFU/gram < 33 CFU/gram
		TYMC	≤ 10 ¹ CFU/gram < 7 CFU/gram
		Staphylococcus aureus	Absent per gram Absent
		Pseudomonas aeruginosa	Absent per gram Absent
		Bile tolerant Gram negative bacteria	Absent per gram Absent

This lot complies with the requirements of the current version of the specification sheet and is analysed conform OMC Monograph Cannabis Flower / Version 8.0 / November 01, 2021. The analyses are performed in compliance with EU-GMP.

After gamma irradiation

Quality Control



06 MEI 2022

B. Huizinga, BSc

Quality Assurance



06 MEI 2022

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Documentcode:	COA-0056	Version:	5.0	Page: 1 / 1



Dutch Monograph (version 8.0, 2021)

Applicable for:

- Fragmented dried flowering tops;
- Fragmented and granulated dried flowering tops;

Identification (TLC)	EP 2.2.27
Loss On Drying	EP 2.2.32
Pesticides	EP 2.8.13
Heavy Metals	EP 2.4.27 / 2.2.58
Assay and related substances	EP 2.2.29
Microbial contamination	EP 2.6.12 / 2.6.13
Aflatoxines	Monograph



Bedrocan dried flowers



Bediol granulated



Experiences over time (2003-2022) I

- Indoor versus outdoor cultivation;
- Standardization needs fully controlled environment;
- Growing without microbiological contamination not possible;
- Standardization and inter-batch variability in THC / CBD concentration: 20%; dedicated growth conditions;



Experiences over time (2003-2022) II

- Drying process is a critical step in production cycle;
- Pesticide contamination in rural areas;
- Take samples with utmost precision and protocolized;
- Stability of internal standard(s) in assay;



Current priorities for cannabis quality

- Adherence to coming EP Monograph on cannabis flos (for example limits set for heavy metals;
- Optimization of homogenization of cannabis flos;
- Discussion on harmonization - standardization of 'Good agriculture Practices' for medicinal cannabis;



Medicinal cannabis complies with pharmaceutical quality guidelines

- Standardized product with constant content (tetrahydrocannabinol, cannabidiol and other)
- Very low concentration of degradation compounds (e.g. CBN)
- Free of contamination
 - Micro-organisms
 - Pesticides
 - Heavy metals
 - Aflatoxines



Thank you for your attention!