

IARC Monographs evaluate the carcinogenicity of opium consumption

Questions and Answers (Q&A)

The meeting for *IARC Monographs* Volume 126: Opium Consumption, convened by the International Agency for Research on Cancer (IARC) in Lyon, France, and held remotely, took place on 11–20 September 2020.

The Working Group of 16 scientists from 10 countries evaluated the carcinogenicity of opium consumption. After thoroughly reviewing the available scientific literature, the Working Group classified opium consumption as *carcinogenic to humans* (Group 1).

The outcome of the assessment has been published in a summary article in *The Lancet Oncology*¹ and will be described in detail in Volume 126 of the [IARC Monographs](#), to be published in 2021.

What is opium?

Opium is an addictive narcotic drug obtained from the juice (latex) of the unripe seed-pods of the opium poppy plant (*Papaver somniferum*). The poppy latex needs only minimal processing to produce opium for consumption. The traditional practices of latex processing vary from place to place and may include air-drying, heat-drying, or boiling. Opium is a complex mixture, which contains many different chemical substances.

This *Monographs* evaluation applies only to opium, which is the minimally processed product derived from the unripe seed-pod of the poppy plant. This evaluation **does not apply to other opiates or synthetic opioids**. Specifically, it excludes consumption of the pure alkaloids that can be extracted from opium (e.g. morphine and codeine), their semisynthetic modifications (e.g. heroin), or wholly synthetic opioid compounds (e.g. fentanyl).

Although it is recognized that there is currently global interest in the epidemic of prescription opioid consumption, the present assessment is limited to carcinogenic hazards posed by the consumption of opium and does not address any potential carcinogenic hazards posed by other opiates or by opioids.

¹ *IARC Monographs* Volume 126 Working Group (2020). Carcinogenicity of opium. *Lancet Oncol*, Published online 8 October 2020; [https://doi.org/10.1016/S1470-2045\(20\)30611-2](https://doi.org/10.1016/S1470-2045(20)30611-2)

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How is opium consumed?

Opium is consumed in two main ways: by smoking and by ingestion (oral consumption). Oral consumption of opium is commonly referred to as “opium eating”, but it can also involve drinking liquid preparations that contain opium.

Which populations have the highest exposure?

There are estimated to be about 5 million people worldwide who consume minimally processed opium. Many of these opium consumers live in low- and middle-income countries in western, central, and southern Asia. In particular, the Islamic Republic of Iran, Afghanistan, and Pakistan are estimated to be the world’s largest per capita consumers of raw or minimally processed opium, with more than 40% of global opium consumption occurring in the Islamic Republic of Iran.

Although opium consumption has historically been associated with parts of eastern Asia, opium consumption in these areas is currently relatively low.

Where do the studies come from?

The available epidemiological studies on opium consumption and cancer in humans have almost all been carried out in the Islamic Republic of Iran. There is scant information about opium consumption in other countries.

Why not study the potential carcinogenic hazards posed by the consumption of other opiates and of opioids?

In 2014, an IARC Advisory Group of experts recommended opium consumption as a high priority for evaluation by the *IARC Monographs*.² The Advisory Group recognized that opium consumption is of considerable public health concern for the countries where it is consumed, and also that there were studies being conducted in these regions that could contribute evidence to the evaluation.

The consumption of other opiates and of opioids (such as from medical prescriptions and from illegal sources) has not been recommended as a priority for evaluation by the *IARC Monographs*. This is partly because there are very few studies investigating opioid consumption as a cancer hazard (although many studies have investigated the use of opioids for cancer pain management).

² IARC (2014). Report of the Advisory Group to Recommend Priorities for *IARC Monographs* during 2015–2019. Internal Report 14/002. Lyon, France: International Agency for Research on Cancer. Available from: <https://monographs.iarc.fr/wp-content/uploads/2018/08/14-002.pdf>.

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What makes opium consumption carcinogenic to humans?

The specific chemicals or other constituents that contribute to the carcinogenicity of opium consumption are unknown. Chemically, opium is a complex mixture that contains at least 25 alkaloids, including morphine, codeine, noscapine, thebaine, and papaverine. It also contains sugars, proteins, fats, water, meconic acid, plant wax, latex, gum, ammonia, and sulfuric and lactic acids. Opium may be contaminated (or, in the case of opium that is illicitly produced and consumed, adulterated) with lead, other heavy metals, and/or arsenic. The *sufficient evidence* for the carcinogenicity of opium consumption in humans comes from studies of both ingestion and smoking of all three main forms of opium (raw opium, opium dross, and opium sap). Thus, the Group 1 classification applies to all forms and routes of opium consumption.

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