Substance Information Document

Cocoa and cocoa products

1. Substance identity

Name	Cocoa and cocoa products
Synonyms	Cacao butter; Cacao oil; Cacao bean oil; Cocoa; Cocoa absolute; Cocoa bean extract
IUPAC Name	N/A*
CAS	8002-31-1; 84649-99-0

*Non answered, IUPAC Name was not found.

2. Toxicological information

Cocoa beans contain a variety of biologically active components, including the methylxanthines theobromine, caffeine and theophylline. The major constituents of biological and pharmacological relevance derived from cocoa and cocoa butter are lipids and theobromine.

Several authors have reported negative results in the Ames test in the presence of cocoa, cocoa products, or theobromine. A study on cocoa powder was negative in the mouse lymphoma assay with or without hepatic microsomal activation.

In a 2-year study on the toxicity of cocoa powder, no evidence of carcinogenicity in male or female Sprague-Dawley rats was found.

There are no studies known which evaluate the acute toxicity of cocoa powder or cocoa butter. Several studies have reported the lethal doses of theobromine and various fatty acids found in cocoa butter. For most fatty acids present in cocoa powder or cocoa butter the reported LD50 was above 2000 mg/kg bw whereas for theobromine, the reported LD50 ranged from 200 to 1350 mg/kg bw.

Several studies have been reported on the short-term biological effects in rats of a high dietary intake of cocoa butter. None of these short-term studies reported any gross adverse effects or toxicological properties.

Results of reproductive studies in rats and rabbits indicate that high levels of theobromine are required to reduce the reproductive viability in these animals. The amounts of chocolate required to reach these same levels of theobromine in humans far surpasses its average daily consumption.

JECFA	-
FEMA	-
EFSA	-
ECHA – REACH dossier	Registration Dossier - ECHA (europa.eu) (CAS 84649-99-0)
PUBCHEM	SID 470723764 - PubChem (nih.gov)
CIR	-

OSHA	-

3. Addictiveness and attractiveness

Regarding addictiveness, several pharmacological effects of cocoa-derived ingredients were reported, including the bronchodilatory effect of theobromine and caffeine, which result in improved bioavailability of nicotine, although data available so far indicate that the content of theobromine per cigarette seems to be too low to have a bronchodilating effect on the lungs (SCENIHR, 2010). Furthermore, reaction products of tryptophan, phenylethylamine, tryptamine and tyramine, are thought to exert monoamine oxidaseinhibiting properties. In general, the pharmacologically active substances present in cocoa do not exclude a psychopharmacological effect in humans, owing to the low exposure concentrations and/or the inability of these substances to cross or reach the blood-brain barrier. Due to a lack of studies specifically on the psychoactive effects of cocoa added to tobacco, there is insufficient evidence that adding cocoa to tobacco makes cigarettes more addictive. Regarding attractiveness, the addition of cocoa to tobacco is intended to enhance flavour. More data are needed on the amount of cocoa that imparts a noticeable flavour.

SCENIHR	Final Opinion on Additives used in tobacco products (Opinion 1) (europa.eu)
EMA	-
PUBMED	Effect of Cocoa and Cocoa Products on Cognitive Performance in Young Adults - PubMed (nih.gov)