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## Introduction

Vicks® VapoRub (VVR) is an over-the-counter decongestant ointment, applied to the chest and/ or throat (for adults and children over 6 years-old) or used for inhalation (for adults and children over 12 years-old) to relieve upper respiratory tract infections symptoms.

VVR is composed of camphor, turpentine oil, levomenthol, eucalyptus oil, and thymol.

Our Regional Pharmacovigilance Centre was alerted about an original use of VVR to lose belly fat: the ointment is applied on the belly and covered by a plastic film overnight.

Many «off-label» uses of VVR are described on the Internet and in the scientific literature. However, the use of VVR can be dangerous, especially because of a risk of seizure.

## Aim

The aim of this study was to describe the use and misuse of VVR and the associated risks.

## Materials & Methods

We searched cases of VVR misuse and related adverse drug reactions (ADRs) in the French Pharmacovigilance Database (until December 2017), Medline and Internet.

## Results

### French Pharmacovigilance Database (FPVD)

A total of 21 ADR reports were identified in the FPVD. They concerned 9 adults and 12 children (from 1 to 13 years old, 8 of whom were under 6 years old). **ADRs** were notably characterized by allergic reactions in 9 cases and convulsions in 4 cases. Twelve cases were considered serious. In 14 cases VVR was administered cutaneously, in 4 cases by inhalation and in 2 cases VVR was ingested.

A **misuse** was identified in 11 cases:

- **In children:** in 7 cases VVR was used by children under 6 years-old (five case of cutaneous application and one case of ingestion) and in one case VVR was inhaled by a children under 12 years-old. Another misuse was identified in four of those cases, with an application all over the face, an application in a child with seizure history (contraindication), one case of ingestion and an application on the skin with a spoon to increase penetration.

- **In adults,** we retrieved 2 cases of nasal application and one case of ingestion of VVR diluted in hot water.

### Medline - Internet

**Use and misuse :** VVR has been described to be effective in onychomycosis<sup>1,2</sup>. Nevertheless, on the Internet, numerous original, but dangerous, uses of VVR are described : to treat acne, to "tingle and cleanse vaginas", to loose weight, to relieve minor pain and aches, to keep mosquitoes away...<sup>3,4</sup>.

**ADRs** reported in the literature described exogenous lipid pneumonia after chronic inhalation or nasal application, seizure, contact dermatitis, or bilateral acute keratitis<sup>5-8</sup>.

## Discussion - Conclusion

VVR exposes patients to ADRs, particularly in children and/or when the ointment is misused. In 2015, the American Association of Poison Control Centers reported 10,754 exposures to camphor, less than 10% of patients were 20 years of age or older.<sup>9</sup> At a time when patients are searching for «natural» drugs, they must be vigilant when they use such a medicine, with a doubtful risk/benefit balance.

When the laboratory marketing VVR (*Procter & Gamble*) was made aware of our case of misuse, they contacted all the websites suggesting off-label use of VVR to limit the flow of dangerous information.

This work has been published in our quarterly Pharmacovigilance journal and cited in other journals.



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