# Rifadin Syrup Under Review for Carcinogen Concerns

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The rifampicin oral solution, Rifadin syrup, is currently under review by regulatory bodies following the detection of N-nitroso-rifampicin, a nitrosamine impurity, at levels exceeding established safety thresholds. This development necessitates a re-evaluation of its risk-benefit profile, particularly for paediatric populations and other patients for whom the syrup formulation is critical for treatment adherence.

**KEY TAKEAWAYS**

- The Pivot: Rifadin syrup contains N-nitroso-rifampicin, a nitrosamine, above acceptable limits.
- The Data: Nitrosamines are classified as probable human carcinogens based on animal studies.
- The Action: Clinicians should assess individual patient risk and consider alternative rifampicin formulations or treatment regimens where appropriate.

Rifampicin is a critical first-line antitubercular medicine, also used in the treatment of various other bacterial infections, including leprosy and prophylaxis for meningococcal disease. Its mechanism of action involves inhibiting bacterial DNA-dependent RNA polymerase, thereby preventing bacterial RNA synthesis. The oral solution formulation, such as Rifadin syrup, is particularly important for patients who cannot swallow solid dosage forms, including young children and individuals with dysphagia. The availability of a liquid formulation ensures accurate dosing and improved adherence in these vulnerable populations. The current concern centres on the presence of N-nitroso-rifampicin, a nitrosamine impurity, in Rifadin syrup. Nitrosamines are a class of compounds known to be probable human carcinogens, with their presence in medicinal products triggering widespread regulatory scrutiny in recent years. The acceptable intake limits for nitrosamines are extremely low, reflecting their genotoxic potential. The detection of N-nitroso-rifampicin above these limits in Rifadin syrup has prompted a comprehensive safety review by regulatory authorities globally.

## Regulatory Review and Clinical Implications

The regulatory review of Rifadin syrup is focused on quantifying the levels of N-nitroso-rifampicin and assessing the potential long-term health risks associated with exposure. Nitrosamines have been identified in various pharmaceutical products, leading to recalls and revised manufacturing processes. The concern stems from their potential to induce DNA damage, which can lead to tumour formation over prolonged exposure. While the immediate risk from short-term use of Rifadin syrup is considered low, the implications for chronic use, particularly in paediatric patients who may receive treatment for extended periods, are being carefully evaluated. The European Medicines Agency (EMA) and other national regulatory bodies have established strict limits for nitrosamine impurities, typically expressed as nanograms per day (ng/day), based on toxicological data and the maximum daily dose of the medicine. The presence of N-nitroso-rifampicin

above these limits necessitates a thorough risk assessment, balancing the potential carcinogenic risk against the clinical benefits of rifampicin therapy. For patients currently receiving Rifadin syrup, clinicians are advised to consider the individual risk-benefit profile. Given rifampicin's essential role in treating serious infections, abrupt discontinuation is generally not recommended without a suitable alternative. Alternative rifampicin formulations, such as capsules or tablets, may be considered for patients who can tolerate them. However, for those who rely on the syrup formulation, such as infants and young children, the decision is more complex. In such cases, the clinical need for rifampicin must be weighed against the potential long-term risk of nitrosamine exposure. Regulatory guidance typically advises that patients should not stop their medicine without consulting their doctor, as the risk of untreated infection often outweighs the theoretical risk from nitrosamine impurities over a short period. Manufacturers are expected to investigate the root cause of nitrosamine formation, which can occur through various pathways, including degradation of the active pharmaceutical ingredient or interactions with excipients or packaging materials. Remedial actions may include changes to the manufacturing process, sourcing of raw materials, or formulation adjustments to minimise or eliminate the impurity. The review process will also consider the availability of alternative rifampicin-containing products and their suitability for different patient populations. The goal is to ensure that patients have access to safe and effective rifampicin therapy while mitigating the risks associated with impurities. This situation underscores the ongoing vigilance required in pharmaceutical manufacturing and quality control to ensure the safety of medicines throughout their lifecycle. The long-term impact of this review may include revised prescribing guidelines for rifampicin syrup, enhanced monitoring requirements, or even market withdrawal if the risks are deemed to outweigh the benefits and no acceptable mitigation strategies can be implemented. The medical community awaits further guidance from regulatory authorities to inform clinical decision-making regarding Rifadin syrup and its use in patient care.

**CLINICAL IMPLICATIONS**

The detection of N-nitroso-rifampicin in Rifadin syrup presents a familiar dilemma for clinicians: balancing the immediate, tangible benefits of an essential medicine against a theoretical, long-term risk. For tuberculosis, leprosy, or meningococcal prophylaxis, rifampicin is not merely an option; it is often the cornerstone of treatment. The immediate cessation of therapy due to a potential carcinogen, particularly in paediatric patients or those with dysphagia who rely on the syrup, could lead to suboptimal treatment outcomes, increased morbidity, and the emergence of drug resistance. Clinicians must therefore exercise careful judgment, prioritising the acute clinical need while exploring safer alternatives.

The pharmaceutical industry faces continued pressure to scrutinise manufacturing processes and supply chains for nitrosamine impurities. This is not an isolated incident; the widespread detection of these compounds across various drug classes, from sartans to ranitidine, indicates a systemic challenge. Manufacturers of rifampicin syrup will need to identify the source of N-nitroso-rifampicin, whether it is a degradation product, an impurity in raw materials, or a reaction during formulation. Remedial actions, such as process changes or reformulation, are imperative to restore confidence and ensure the long-term viability of this critical medicine. The cost and complexity of these investigations and subsequent changes will undoubtedly be significant.

> For patients, particularly parents of young children receiving Rifadin syrup, this news understandably generates anxiety. It is crucial for healthcare providers to communicate the situation clearly, emphasising that the immediate risk of stopping treatment often outweighs the theoretical long-term risk of low-level nitrosamine exposure. The focus should be on identifying suitable alternative rifampicin formulations or regimens where feasible, without causing undue alarm or disrupting essential treatment. This incident highlights the ongoing tension between regulatory stringency and the practical realities of patient care, demanding a nuanced approach from all stakeholders.

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## REFERENCES

1. 1. European Medicines Agency (EMA). Rifadin oral suspension and syrup and associated names — referral. 2025. Available at: https://www.ema.europa.eu/en/medicines/human/referrals/rifadin-oral-suspension-syrup-associated-names
2. 2. van Haarst A, Smith S, Garvin C, Benrimoh N, Paglialunga S. Rifampin drug–drug–interaction studies: Reflections on the nitrosamine impurities issue. Clin Pharmacol Ther. 2023;113(4):816-821. doi:10.1002/cpt.2652
3. 3. Paglialunga S, van Haarst A. The impact of N-nitrosamine impurities on clinical drug development. J Pharm Sci. 2023;112(5):1183-1191. doi:10.1016/j.xphs.2023.01.017
4. 4. Vikram HPR, Pramod Kumar T, Kumar G, et al. Nitrosamines crisis in pharmaceuticals — insights on toxicological implications, root causes and risk assessment: A systematic review. J Pharm Anal. 2024;14(5):100919. doi:10.1016/j.jpha.2023.12.009
5. 5. European Medicines Agency (EMA). Nitrosamine impurities in specific medicines. 2024. Available at: https://www.ema.europa.eu/en/human-regulatory-overview/post-authorisation/pharmacovigilance-post-authorisation/referral-procedures-human-medicine

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