# Introduction and Background

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## Introduction

1. The Scientific Advisory Committee on Nutrition (SACN) last considered maternal diet and nutrition in relation to offspring health, in its reports on ‘The influence of maternal, foetal and child nutrition on the development of chronic disease in later life’ (SACN, 2011) and on ‘Feeding in the first year of life’ (SACN, 2018). In the latter report, the impact of breastfeeding on maternal health was also considered. In 2019, SACN agreed to conduct a risk assessment on nutrition and maternal health focusing on maternal outcomes during pregnancy, childbirth and up to 24 months after delivery; this would include the effects of chemical contaminants and excess nutrients in the diet.

2. SACN agreed that, where appropriate, other expert Committees would be consulted and asked to complete relevant risk assessments e.g., in the area of food safety advice. This subject was initially discussed during the Committee on the Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) horizon scanning item at their January 2020 meeting with a scoping paper being presented to the COT in July 2020. This included background information on a provisional list of chemicals proposed by SACN. It was noted that the provisional

list of chemicals was subject to change following discussion by COT who would be guiding the toxicological risk assessment process: candidate chemicals or chemical classes can be added or removed as the COT considered appropriate. The list was brought back to the COT with additional information in September 2020. Following a discussion at the September 2020, COT agreed that papers on a number of compounds should be prioritised, among which was the mycotoxin citrinin.

3. The following statement sets out the advice of the COT on whether UK exposures to citrinin would pose a risk to maternal health, i.e. maternal outcomes during pregnancy, childbirth and up to 24 months after delivery.

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4. Citrinin is a mycotoxin produced by several species of fungi of the genera *Aspergillus*, *Penicillium* and *Monascus*. Its occurrence is generally due to formation after harvest under storage conditions. It occurs mainly in grains but is also found in other products of plant origin e.g. beans, fruits, fruit and vegetable juices, herbs and spices as well as in spoiled dairy products.

5. Experimental data indicate that citrinin residues may occur in the edible tissues of pigs (Meerpoel et al., 2020a) and in edible tissues and eggs in chickens (Abdelhamid and Dorra, 1990, Meerpoel et al., 2020a) following oral exposure to highly contaminated feed materials. However, citrinin was not detected in edible animal products in the 2014 Total Diet Study (TDS) so the carryover of citrinin from feed into animal products is not considered further in this assessment (FSA, 2014).

6. Citrinin is also an undesirable contaminant in Monascus fermentation products such as red yeast rice (RYR), also known as red mould rice (RMR). RYR is used in Asian cuisine as a food colourant and flavour enhancer and in supplements claiming to decrease plasma triglyceride and cholesterol levels (Wei et al., 2003). In 2019, the maximum level for citrinin in RYR preparations was reduced from 2000 µg/kg to 100 µg/kg in Commission Regulation (EC) No 1881/2006 (amendment: Commission Regulation (EU) 2019/1901). The majority of packaging of RYR supplements either states that the product is not suitable for children and/or women who are pregnant or breast feeding, or recommends that these groups should consult a general practitioner (GP) prior to consumption. Due to the presence of warnings on supplement packaging, and the focus of this assessment being on the maternal diet, RYR supplements are not considered

further in this assessment.