**CIRCULAR DICHROISM SPECTROSCOPY REVEALS NEW POSSIBILITIES IN DETERMINATION OF STERIGMATOCYSTIN IN AQUEOUS SOLUTIONS**

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**Backgrounds:**

Sterigmatocystin (STC) is a mycotoxin produced by many fungal species, ubiquitous in working and living environment. STC exhibits hepatotoxic, nephrotoxic, mutagenic and carcinogenic effects representing a significant risk to human and animal health. LC-MS is the most commonly used technique for the STC detection. Possible complications like matrix effects on ionisation efficiency make use of isotopically labelled STC internal standard inevitable, in addition to laborious sample preparation. Circular dichroism (CD) spectroscopy is extensively used to study structural, kinetic and thermodynamic features of chiral molecules. Since STC is chiral molecule CD spectroscopy for its determination in various substrates is worth of exploring.

**Objectives:**

The purpose of this study was to demonstrate CD spectroscopy application in the determination of STC in various aqueous matrices.

**Methods:**

CD spectra of STC aqueous solutions were recorded by standard Jasco J810 setup in 1 cm quartz cuvette at various physicochemical conditions (temperature, organic solvents and salts addition).

**Conclusions:**

STC forms aggregate in aqueous solutions, yielding strong CD signal in 300-400 nm range specific to STC, with the intensity up to 1000:1 compared to the baseline. The CD signal intensity is proportional to STC concentration within 10-7 M to 10-5 M range, and none of relevant species from food or environment (including structurally similar aflatoxin B1) does not interfere with this CD-signal. These facts strongly encourage an innovative approach to STC monitoring, which could result in a completely new analytical method for the specific determination of STC, as well as studying non-covalent interactions of STC with biomacromolecules.