8 September 2024 | Copenhagen

TESTING, ASSESSMENT AND CLASSIFICATION OF THYROID HORMONE DISRUPTORS

This workshop is a satellite event of EUROTOX 2024, Copenagen, 8-11-09-2024

Workshop background and objectives

The ECETOC Thyroid (T4) Task Force has worked on the question of how to assess and investigate compounds, which show effects in the thyroid of laboratory animals, with particular emphasis on the neurodevelopment of offspring following in utero exposure to compounds affecting thyroid hormone balance. In our publications (Sauer et al., 2020[1], Marty et al., 2021[2], Marty et al., 2022[3], Melching-Kollmuss et al., 2023[4])[a] both human evidence for maternal thyroid hormone related neurodevelopmental toxicity as well as an extensive evaluation of rat data (comprising thyroid hormone data in adults and offspring, brain histopathological and observational neurodevelopmental effects of compounds with different thyroid molecular initiating events), using Adverse Outcome Pathway (AOP) approaches, was conducted.

This allowed us to identify relevant neurodevelopmental parameters, potential thresholds for offspring thyroid hormone levels below which no neurodevelopmental toxicity is to be assumed and correlations between levels of thyroid hormone decrements, brain histopathological outcomes and neurobehavioural findings. Moreover, a scheme to assess thyroid active compounds was developed.

ECETOC and RSA would like to propose a workshop involving regulatory toxicologists, pathologists and clinical pathologists together with experts from European regulatory authorities to review the state of the science and its current application in regulatory decision-making, and to propose future options for improving the evaluation of thyroid hormone related neurodevelopmental toxicity, including the proposed ECETOC testing and assessment scheme.

A **satellite meeting back-to-back with the EUROTOX Congress** is considered to be the ideal opportunity to provide a forum for debate amongst regulatory and experimental toxicologists from authorities, academia and industry. The satellite Symposium will be independently organized by ECETOC and RSA, including venue, meeting rooms, speaker selection and invitation, and participant invitation.

[a] References can be found at the end of the programme

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Draft Outline of the Symposium programme

Item	Start	End	Agenda item	Who
1	11:30 AM	12:00 PM	Arrival and registration	
2	12:00 PM	12:30 PM	**Welcome Lunch** (Registration to continue through lunch)	
3	12:30 PM	12:40 PM	**Welcome, introduction and symposium objectives**	Representative from Academia and Christine Walter (RSA)
4	12:40 PM	1:00 PM	**ECETOC Testing and Assessment Scheme**	Stephanie Melching-Kollmuss (BASF)
5	1:00 PM	1:20 PM	**Experiences with Thyroid ED assessment - EFSA**	Martina Panzarea (EFSA)
6	1:20 PM	1:40 PM	**Experiences with Thyroid ED assessment & criteria for the ED Guidance – ECHA**	Niklas Andersson (ECHA)
7	1:40 PM	2:00 PM	**In vitro and in vivo investigation of pesticide effects on the T-axis**	Philip Marx-Stoelting (BfR)
8	2:00 PM	2:20 PM	***Coffee break***	
9	2:20 PM	2:40 PM	**Examples collected by industry in context of the ECHA ED Guidance**	Helen Tinwell (Bayer)
10	2:40 PM	3:00 PM	**How to identify adverse neurodevelopmental toxicity in laboratory animals**	Heike-Antje Marxfeld (BASF)
11	3:00 PM	3:20 PM	**Decisive new endpoints for neurodevelopment**	Katie O'Shaugnessy (US EPA)
12	3:20 PM	3:40 PM	**Assessment of thyroid hormone alterations in rat brain and plasma**	Christiane Hindrichs (BASF Metabolome Solutions)
13	3:40 PM	4:00 PM	**Quantitative and species-specific aspects**	Lysiane Richert (Kaly-Cell)
14	4:00 PM	4:15 PM	**Summarise and closing remarks**	Co-chair and rapporteur or moderators
15	4:15 PM	4:45 PM	***30 min to EUROTOX opening ceremony***	
16	4:45 PM	6:45 PM	**EUROTOX Congress Opening Ceremony (Tivoli Hotel & Congress Center)**	

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About the organisers

ECETOC is a not-for-profit scientific association that provides a collaborative space for leading scientists from academia, governments and industry to develop and promote trusted and practical scientific solutions which ensure a safe, sustainable and healthy world. For more information please visit https://www.ecetoc.org/

RSA (Regulatory Science Associates) was formed in 2007 with a group of experts delivering human health toxicology and regulatory affairs consultancy services. Further information can be found at www.regulatoryscience.com

ECETOC and RSA have significant experience organising workshops and conferences to facilitate the communication of science. Both organisations are working jointly to organise this thyroid hormone related symposium for 2024.

References

[1] Sauer, U. G., Asiimwe, A., Botham, P. A., Charlton, A., Hallmark, N., Jacobi, S., . . . Swaen, G. (2020). Toward a science-based testing strategy to identify maternal thyroid hormone imbalance and neurodevelopmental effects in the progeny - part I: which parameters from human studies are most relevant for toxicological assessments? *Crit Rev Toxicol, 50*(9), 740-763. doi:10.1080/10408444.2020.1839380

[2] Marty, S., Beekhuijzen, M., Charlton, A., Hallmark, N., Hannas, B. R., Jacobi, S., . . . van Ravenzwaay, B. (2021). Towards a science-based testing strategy to identify maternal thyroid hormone imbalance and neurodevelopmental effects in the progeny - part II: how can key events of relevant adverse outcome pathways be addressed in toxicological assessments? *Crit Rev Toxicol, 51*(4), 328-358. doi:10.1080/10408444.2021.1910625

[3] Marty, M. S., Sauer, U. G., Charlton, A., Ghaffari, R., Guignard, D., Hallmark, N., . . . van Ravenzwaay, B. (2022). Towards a science-based testing strategy to identify maternal thyroid hormone imbalance and neurodevelopmental effects in the progeny-part III: how is substance-mediated thyroid hormone imbalance in pregnant/lactating rats or their progeny related to neurodevelopmental effects? *Crit Rev Toxicol, 52*(7), 546-617. doi:10.1080/10408444.2022.2130166

[4] Melching-Kollmuss, S., Bothe, K., Charlton, A., Gangadharan, B., Ghaffari, R., Jacobi, S., . . . van Ravenzwaay, B. (2023). Towards a science-based testing strategy to identify maternal thyroid hormone imbalance and neurodevelopmental effects in the progeny – Part IV: the ECETOC and CLE Proposal for a Thyroid Function-Related Neurodevelopmental Toxicity Testing and Assessment Scheme (Thyroid-NDT-TAS). *Critical Reviews in Toxicology, 53*(6), 339-371. doi:10.1080/10408444.2023.2231033