We interviewed Professor Pierre MARQUET, head of the Pharmacology, Toxicology and Pharmacovigilance department at the University Hospital of Limoges, France. His research area is pharmacology and toxicology. Since 2007, he has been the head of the INSERM research unit UMR 850 in “Pharmacology of immunosuppressive drugs in transplantation” (INSERM is the French National Institute of Medical and Health Research). Professor MARQUET and Shimadzu started a collaborative project in 2013 that has already yielded several achievements.

Shimadzu:
Professor MARQUET, thank you very much for taking some time for this interview. First of all, could you tell us about the background of this collaborative research? Why did you choose Shimadzu?

Professor MARQUET:
For most of these newly developed methods, the LCMS-8050 replaces more than one GC-MS. The latter requires long but also manual sample preparation. Budget restrictions being a strong reality in French hospitals, the lack of technicians is surely felt. This technological switch allows us to maintain and develop our activity despite fewer technicians, while reporting the results faster. Another focus that we have in mind when doing new developments is the introduction of new illicit or therapeutic drugs to our panels of tests.

Shimadzu:
Finally, could you please share any requests that you have with respect to instrument vendors?

Professor MARQUET:
It is important to know what you think of us and our collaboration. We will strive to meet your requests more than ever. Thank you very much.

Shimadzu:
Then could you outline your aims and let us know what methods have been developed so far?

Professor MARQUET:
In the early part of this collaboration, our aim was to establish four methods during the first year, but we have fallen behind. This can be explained both by a difficult start with the system configuration and the limited time we have been able to devote to such developments. Today, we have some pretty good results. Three of the four techniques we planned are currently being validated and the 4th is under development.

We have developed methods for the detection of drugs (cocaine and metabolites, opiates and codeine, amphetamines and analogues), a large number of anthracyclines and antiangiogenics (including new oral antiangiogenics). A method for cannabidiol is being optimized because we are facing a memory effect in the on-line extraction columns.

We had hoped to use on-line sample preparation systematically, as is already the case in our pharmacology lab. However, it is not working as we had hoped, probably because we handle many heterogenous molecules with different acid-base properties and/or polarities. Therefore, it has been difficult to find a single solid-phase extraction condition for all these molecules.

Shimadzu:
Why are you interested in such developments? What is your goal?

Professor MARQUET:
When I think of Shimadzu instruments, sensitive and robust are the first two adjectives that come to my mind. We use the QUATTRE preparation method, that is, to say liquid extraction by salting effect. This preparation induces a dilution of the sample, which is hardly to be purified and then concentrate the samples prior to the analysis. Thus, the Shimadzu’s instrument sensitivity saves much time, as it is not necessary to concentrate the samples anymore. Also, dilution reduces matrix effects, which is a good thing.

Moreover, thanks to UPLC and the system speed (run-time reduction), we have optimized our analysis times. Wherein the past we needed 2 LC-MS/MS systems, one LC-MS/MS system is now sufficient and there is time left for other analyses.

Shimadzu:
Are what Shimadzu’s strengths compared to other vendors? (not limited to the instruments)

Professor MARQUET:
Apart from this specific collaboration, the “Pharmacology, Toxicology and Pharmacovigilance” department at Shimadzu are long-time collaborators. A strong relationship based on trust has been established and there are many reasons for this.

First of all, we said earlier, the instruments are robust and sensitive, which is why there are so many Shimadzu HPLC and GC-MS systems in our department. In our laboratory, where many multiplexes are carried out, it is important to have robust systems well maintained over time. Your good and reliable after-sale service distinguishes you from some of your competitors. We are in a specific situation: we have a large analytical peak but we cannot objectively assess it rapidly. So we have to make it work as long as possible. Shimadzu is characterized by not planning system obsolescence and provides long-term support, which are very valuable assets.

Furthermore, our lab technicians can easily use the different instruments because of the common software for HPLC, GC-MS and LC-MS/MS.

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**[Image of Professor Pierre MARQUET, Jean-Michel GAULLIER, Denis RAFFIER](from left to right)**

Here are his 2014 publications:


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Prof. MARQUET

For most of these newly developed methods, the LCMS-8050 replaces more than one GC-MS. The latter requires long but also expensive sample preparation and analysis. Other labs had already taken the step but we did not have enough LC-MS/MS instruments to dedicate one (or most of one of them) to illicit drug analyses.

Shimadzu:

Then could you outline your aims and let us know what methods have been developed so far?

Prof. MARQUET

Apart from this specific collaboration, the “Pharmacology, Toxicology and Pharmacovigilance” department and Shimadzu are long-time collaborators. A strong relationship based on trust has been established and there are many reasons for this. First of all, we all work together, the instruments are robust and sensitive, which is why there are so many Shimadzu HPLC and GC-MS systems in our department. In our laboratory, where many routine tests are carried out, it is important to have robust systems well maintained over time. Your good and reliable after-sale service distinguishes you from some of your competitors. We are in a specific situation: we have a large analytical peak but we cannot objectively see it regularly. So we have to make it work as long as possible. Shimadzu is characterized by not planning system obsolescence and provides long-term support, which are very valuable assets. Furthermore, our lab technicians can easily use the different instruments because of the common software for HPLC, GC-MS and LC-MS/MS.

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Research Activities: