

## Calculating aggressive behavior towards inanimate objects using a machine

With the development of a psychotropic drug, we assess how aggression of the laboratory animal changes after giving it the new drug, surveying the details and assessing the effect of said drug on the brain. Generally, male laboratory animals are made to fight each other and it is analyzed for aggression (Resident Intruder Test). But the results of this method may vary based on the relationship between the animals, as well as bias of the observer. Furthermore, since male hormones are required for aggression to be exhibited, the inability to use female laboratory animals is a disadvantage, and since we know the effect of the psychotropic drug differs greatly between the two genders, performing the aggressive behavioral test on male laboratory animals alone is an issue. With the development of this psychotropic drug, the appropriate thing to do would be to introduce an aggressive behavioral test that is not influenced by male hormones.

Our research group has developed a tool to measure aggressive behavior towards inanimate objects (Patent number 4858996 Aggression Response Meter: ARM). This tool focuses on the mouse's aversion to objects that contact its body, and the increase in aggression to said objects in mice that have stress disorder and depression-like diseases. Normal animals don't react much when poked with a stick, but those with mental illnesses cannot tolerate it and tries to eliminate it by biting it aggressively. The aggressive behavior that are exhibited in these animals with mental illnesses is known as aggressive biting behavior towards inanimate objects. As these mental symptoms get stronger, their aggression towards objects becomes stronger. Therefore, if we were to measure the force at which the animals bite the stick, we can evaluate how heavy the mental symptoms in said animals are, and since it is a mechanical measurement, there is the advantage of subjectivity and bias not affecting the results and lowers the differences in data based on individual researchers' bias. The tool we have

invented was technology transferred to Muromachi Kikai Co. Ltd. and is being manufactured (Aggression Response Meter: ARM).