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Using a Photon Beam for Thermal Nociceptive Threshold Experiments[1] AZIDA WALKER, JEFFERY ANDERSON, SPENCER SHERWOOD, University of Central Arkansas — In humans, risk of diabetes and diabetic complications increases with age and duration of prediabetic state. In an effort to understand the progression of this disease scientists have evaluated the deterioration of the nervous system. One of the current methods used in the evaluation of the deterioration of the nervous system is through thermal threshold experiments. An incremental Hot / Cold Plate Analgesia Meter (IITC Life Science,CA is used to linearly increase the plate temperature at a rate of 10 ^{o}C min-1 with a cutoff temperature of 55 ^{o}C. Hind limb heat pain threshold (HPT) will be defined as a plate temperature at which the animal abruptly withdraws either one of its hind feet from the plate surface in a sharp move, typically followed by licking of the lifted paw. One of the disadvantages of using this hot plate method is in determining the true temperature at which the paw was withdrawn. While the temperature of the plate is known the position of the paw on the surface may vary; occasionally being cupped resulting in a temperature differentiation between the plate and the paw. During experiments the rats may urine onto the plate changing the temperature of the surface again resulting in reduced accuracy as to the withdrawal threshold. We propose here a new method for nociceptive somatic experiments involving the heat pain threshold experiments. This design employs the use of a photon beam to detect thermal response from an animal model. The details of this design is presented.

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