VALUES FOR TAURINE IN A 5% TCA EXTRACT OF WHOLE RAT MEDULLA WERE DECREASED BY 19% AFTER ACID HYDROLYSIS OF SAMPLES. VALUES FOR TAURINE IN A SIMILAR EXTRACT OF RAT CEREBELLUM WERE UNAFFECTED BY HYDROLYSIS. THE VALUES FOR TAURINE WERE LOWER IN THE MEDULLA AND CEREBELLUM OF 3-ACETYLPIRIDINE TREATED RAT (65 mg/kg i.p.) WHEN THE UNHYDROLYZED TCA EXTRACT WAS ASSAYED. HOWEVER, WHEN THE HYDROLYZED TCA EXTRACT WAS ASSAYED, THE LEVEL OF TAURINE IN THE MEDULLA WAS NOT LOWER IN THE 3-AP TREATMENT RAT BUT IT WAS REDUCED IN THE CEREBELLA OF THE DRUG-TREATED GROUP. 3-ACETYLPIRIDINE APPEARED TO REDUCE THE LEVELS IN THE MEDULLA OF ACID-LABILE COMPOUNDS WHICH CAN INTERFERE WITH THE ESTIMATION OF TAURINE.

INTRODUCTION

Intraperitoneal injection of 3-acetylpypidine (3-AP) causes the destruction of the medullary inferior olivary nucleus and the cerebellar climbing fibers.
(1) that project from this nucleus. Perry et al. (6) have reported that taurine levels in rat cerebellum decreased after 3-AP injection. Studies in our laboratory confirmed the decrease in taurine levels in cerebellum (7) and, in addition, demonstrated decreased levels of taurine in the medulla (3, 4). After these studies were completed, it came to our attention that acid-hydrolysis-labile compounds, particularly glycercylphosphoryl ethanonoamine, can potentially interfere with the assay of taurine (8). The purpose of this work was to determine if acid-hydrolysis-labile compounds are present and interfered with the assay of taurine by the method of Orr et al. (5) in whole cerebellum or medullar of saline or 3-AP-injected Wistar rats.

EXPERIMENTAL PROCEDURE

Adult male Wistar albino rats (150-225 g) were injected intraperitoneally with 65 mg/kg 3-AP (Sigma Chemicals, St. Louis, Missouri) in 0.9% saline and maintained as previously described (3). Control rats were injected with 0.9% saline alone. Rats were decapitated 14 days postinjection and the cerebella and medulla were quickly removed, frozen on dry ice and stored at -70°C.

The frozen tissue was homogenized in ice-cold 5% (w/v) trichloroacetic acid (TCA) to a concentration of 0.05 g wet tissue weight per ml TCA. Glass "Ten Broeck" tissue grinders were used. The homogenates were placed on ice for 45 minutes and were then centrifuged at 2500 g for 10 minutes at 2°C (PR-J International Centrifuge) to sediment protein. Aliquots (100-125 µl) of the supernatant were first extracted with ether to remove TCA and then evaporated to dryness in vacuo. The dried material was redissolved in twice-distilled H₂O; 100 µl aliquots of each sample were hydrolyzed in 1 N HCl for 3 hours at 110°C (8). Hydrolyzed aliquots were dried in vacuo to remove HCl and then resuspended in 100 µl H₂O. Taurine levels in hydrolyzed and unhydrolyzed aliquots of each sample were assayed by the procedure of Orr et al. (5). Appropriate standards of taurine were taken through both procedures along with samples. Protein values were determined by the procedure of Lowry et al. (2).

RESULTS AND DISCUSSION

Values for taurine in control and 3-AP lesioned cerebella were not significantly decreased after hydrolysis of the TCA extract (Table I). These data suggest that there are no significant amounts of contaminants in the TCA extract of the cerebellum of the rat which would interfere with the taurine assay. Taurine levels were reduced in 3-AP-lesioned cerebella to the same extent (15-20%) in both the hydrolyzed and unhydrolyzed cerebellar samples. These data agree with previous publications (3, 6, 7).

In the medulla samples, there was a significant reduction in the value for taurine in the unhydrolyzed extract from the 3-AP treated rat relative