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论文

甘草次酸的去氧皮质酮(DOC)样作用分析

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摘要:

将甘草次酸25毫克注射于体重140-180克的大鼠,能引起明显的水和钠储留.此作用比1毫克的去氧皮盾酮醋酸酯(DOCA)作用稍强。5毫克的醛固酮拮抗剂SC-9420(spironolactone)可明显拮抗25毫克甘草次酸和1毫克DOCA的水和钠储留作用,但拮抗DOCA的作用更强.△^{6}-6-甲基皮质酮醋酸酯系一种有明显抗炎和利尿作用的甾体,该药能明显拮抗DOCA的水和钠储留作用,并促进钾的排泄,但对甘草次酸的作用无明显影响.此外,甘草次酸对戊巴比妥钠引起的小鼠睡眠时间无任何明显影响.以上结果指出,甘草次酸对电解质和水分代谢的作用与DOC十分相似.关于甘草次酸对电解质和水分代谢的作用机制存在两种看法,有些作者认为,甘草次酸能抑制体内皮质激素(包括DOC)的代谢性失活,血液中皮质激素浓度相应地升高,结果出现激素样作用;另一些人则认为,甘革次酸可直接作用于賢脏,起DOC样作用.本文强果支持后一种看法.

关键词:

STUDIES ON THE MECHANISM OF THE DESOXYCORTICOSTERONE (DOC)-LIKE ACTIONS OF GLYCYRRHETINIC ACID IN THE RAT

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Abstract:

Glycyrrhetinic acid has been shown to have DOC-like actions. Thus, it produces retention of sodium and water, and increases potassium excretion in animals and man. However, its mechanism of action is not well understood. It has been suggested that the DOC-like action of glycyrrhetinic acid is due to inhibition of the metabolic inactivation of the adrenal cortical hormones by the drug. In opposition to this is the opinion that as the structure of glycyrrhetinic acid resembles that of DOC in certain respects, the drug by itself can produce DOC-like action. In view of the above contradiction, an attempt was made to explore into the mechanism by which glycyrrhetinic acid exerts its actions on electrolyte and water metabolism. Female rats weighing 140-180 grams were injected intramuscularly with 25 mg of glycyrrhetinic acid per rat, and were then given 5 ml of 0.45% NaCl solution per 100 grams body weight. The urine volume and sodium excreted in 6 hours decreased markedly, and the ratio of urine Na/K was also lowered despite of the fact that the po- tassium excretion was unchanged. Here, the action of the drug was slightly more potent than that of 1 mg of DOCA. Spironolactone, an aldosterone antagonist, at a dose of 5 mg per rat significantly antagonized the sodium- and water- retaining actions of both glycyrrhetinic acid and DOCA. Nevertheless, the action of glycyrrhetinic acid was blocked to a lesser extent than that of DOCA. △^{6}-6-Methyl-cortisone acetate, a steroid with antiphlogistic and diuretic actions, markedly antagonized the actions of DOCA, but not those of glycyrrhetinic acid. The above results are in favour of the hypothesis that the DOC-like action of glycyrrhetinic acid is the result of a direct action on the function of the kidney.

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