some biological effects of prolactin hormone in mice

mohamed elsaid abdelhalim

The obtained results in this investigation repres-ent the influence of prolactin on plasma level of diff-erent hormones with metabolic activity including GH, TSH, cortisol, glucagon and insulin in male, female mices and virgin as well the uptake of C14-Galactose, C14-Valine and C14-Arginine in different tissues ofmices.Four logarismic doses of prolactin (10, 59, 144 and 350 pg/kg.B.W.) was performed and sampling (forhormonal assay) were 30 min 24 hrs, and 72 hr. following the i.p. application of prolactin, but sampling (for the C14-Galactose, C14-Valine and C14-Arginine) was24 hr. following the administeration of the different prolactin doses.The results were, then, stastistically analysed and illustrated in 27 tables and 9 figures.The gained results can be summarised in the follow-ing items:Effect on GHa)In immature male mice:The lowest dose of prolactin (10 pg) induced a significant increase in the level of GH but only 30 min. after the application, whole after 24 and 72 hr as well the other doses of prolactin (59, 144 + 350 jig) after 30 min, 24 and 72 hr induced, In contrast a significant decrease in the plasma level of Mi.b)In immature female mice:The 10 pg dose of prolactin decreased the levelof GH of 30 min. and 24 hr but increased it significantly after 72 hr the other higher doses of prolactin resulted in a significant decrease of GH in the plasma after 30 min. 24 and 72 hr but with tendency to some increasewith the time.c)In virgin:The lowest doses (10, 59 jig) of prolactin showed a significant decrease in GH level of plasma after 30 min. in case of 10 jig after 30 min. and also 24 hr in case of 59 jig. Meanwhile, the significant decreasing after 144 pg and 350 jig after 30 min 24 hr 72 hr.II. Effect on TSH:a)In immature male:Meanwhile, the decreasing in TSH hormone level in plasma after 30 min. of from lowest doses of prolactin, then TSH level increased after 24, 72 hr but the highest doses of prolactin also decrease in TSH level after 30 min. and also increased the levels of TSH hormone after72 hr.b)In immature female mice:There are a relation with time between dose and a significant decreasing in the TSH level of plasma.c)In virgin:The level of TSH in plasma following different doses of prolactin in virgin showed a bell-shaped character in relation with time i.e. it decreased significantelly after 30 min. as well after 72 hrs. while increased significantly after 24 hrs.•■■ Effect of cortisola)In immature male:The plasma level of cortisol increased driastically following all doses of prolactin (except the lowest dose after 30 min.) This increase was proportional with the dose of prolactin.b)In immature femaleAll doses of prolactin induced also a dramatic increase of cortisol in plasma. c)In virgin:Except the highest dose of

prolactin (350 jig) after 30 min., there was and a significant increase of plasma cortisol level following all doses of prolactin, but not proportional with the dose as descriped in immature male and female. Effect of Glucagon: a) In immature male:The level of glucagon on plasma was variable acc-ording to the dose and time after application. It hasEffect of Insulin:a)In immature male:While, the lowest dose of prolactin (10 yg) induced no significant changes in plasma level of insulin, the other higher doses, in cd:c:rast, resulted in a signif-icant increase after the different tested times.b)In immature femaleExcept the highest dose (350 pg) after 72 hr. which, resulted in a significant decrease in plasma level of insulin all the other tested doses of prolactin induceda significant increased.c)In virginWhile, the lowest and highest doses of prolactin (10, 350 yg) induced no significant changes on a plasma levels of insulin, the other tested doses (59, 144 jig) resulted in a significant and marked increase of insulin.Effect on liver uptake of C14-Galactose, C14-Valine and C14-Arginine:A: In Immature males The liver uptake of galactose increased significantly following the 10 pg dose of prolactin, and did not changed after the 59 yg dose, while the 144 and 350 pg doses decreased the liver uptake of Galactose.I Valine uptake by the liver increased significantly after the 10 pg prolactin and the 59 yeg dose while remained in the control level following the 144 pg dose of prolactin, but DROPed significantly following the 350 pg dose of prolactin.1E The liver uptake of arginine showed two physic reactions, while the low doses of prolactin (10 and 59 pg decreased the uptake, the high doses (144, 350 yg) in contrast, increased the liver uptake of Arginine.B: In Immature female:2 The liver uptake of glactose increased significantly after the 10 jig dose of prolactin and did not changed following the 59 lig dose, then DROPed significantly after the 144 and 350 pg dose of prolactin.•Valine uptake by liver elevated significantly follow-ing the low doses of prolactin (10 and 59 pg), but it DROPed markedly of the 144 and 350 pg.3Liver uptake of Arginine increased markedly following the different doses of prolactin.C: In virgin:I Galactose uptake by the liver increased significantly of 10 pg and 144 pg prolactin doses while, DROPed markedly following the 59 and 350 pg doses.a Valine uptake by the liver increased significantly after 10 and 59 pg doses of prolactin while, did not changed in 144 pg dose of prolactin but, DROPed markedly in high dose (350 pg PRL).■Liver uptake of Arginine DROPed significantly afterthe 10 pg dose as well 59 pg prolactin. In contrast, following the 144 pg dose and the 350 pg prolactin.Effect on kidney uptake of C14-Galactose, C14-Valine and C-Arginine: A:In immature male mice:x Galactose uptake kidney did not changed after 10 pg prolactin dose, while the other higher doses (59, 144, 350 jig) elevated the uptake significantly and the incre-ase with proportional to the dose.x The kidney uptake of valine increased significantly following the different doses of prolactin.z Kidney uptake of arginine elevated significantly and proportionally following the different doses of prolac-tin. B:In immature female:Galactose uptake by kidney did not affected by 10 jig prolactin dose, while elevated markedly after 59 pg and 144 jig, then DROPed significantly following the 350 pg dose.a Kidney uptake of arginine elevated also proportionally with the dose of prolactin.IMPC: In virginGalactose uptake in kidney revealed no significant changes after the 10 jig pxolactin dose, while 59 jig, 144 and 350 yg doses elevated in markedly.m Uptake of valine in kidney increased significantly following the 10 jag, 59 and 144 jig doses, while the

largest one (350 pg) decreased it significantly.a Uptake of Arginine by the kidney increased markedly and proportionally following the different doses of prolactin. Effect on muscle uptake of C14-’ Galactose, C14-Valine and C14-Arginine:A: In Immature male:t Galactose uptake by the muscle elevated only following the smallest dose of prolactin while, the other higher doses (59, 144, and 350 pg prolactin) induced no signif-icant changes.a Uptake of valine by muscle decreased significantly following the different doses of prolactin. The higher dose of prolactin, the more DROPing of valine uptake.The only significant change in arginine followed the 10 pg of prolactin while the other doses did not affect the uptake. B:In Immature female:s Galactose uptake in muscle increased significantly following the 10 and 59 pg doses of prolactin while DROPed, in contrast, after 144 and 350 pg doses.The uptake of valine by muscles showed no significant change following the smallest -dose of prolactin (10 pg), but the other doses (59, 144 and 350 pg) induced a signif icant decrease in the muscle uptake of valine.Muscle uptake of Arginine DROPed only after the 144 and 350 pg doses of prolactin, while the smaller doses (10 and 59 pg) induced no significant changes. C:In virgina Galactose uptake by muscle is changed only after the smallest (10 pg) and the largest dose (350 pg); the first decreased the uptake significantly while, the 350 pgdose elevated the uptake significantly.I The valine uptake increased significantly following the 10 and 59 jig doses of prolactin, the 144 pg dose induced no significant changes, but the 350 pg prolactin decreased the uptake significantly.Muscle uptake of Arginine increased significantly after the 10 and 350 pg prolactin doses while, the other two doses (59 and 144 pg) induced no significant changesin muscle uptake of Arginine. Effect on Gonadal uptake of C14-Galactose, C14-Valine and C14-Arginine:A: In Immature males Galactose uptake by testis increased significantly following the 10 pg dose of prolactin, whilb decreased significantly, in contrast, following the higher doses.a Valine uptake by testis increased also after 10 jag of prolactin, but the 59, 144, and 350 pg doses DROPed it significantly.a Arginine uptake by testis DROPed significantly foll-owing the 10 pg dose and the 350 yg prolactin dose, but the other doses (59, 144 pg) induced no significantchanges.B: In Immature females:•Ovary uptake of Galactose elevated significantlyafter 10 pg dose, while the other doses (59, 144 and 350 jig) DROPed the uptake significantly.s Valine uptake by ovary draped markedly following different doses of prolactin.•The uptake of Arginine decreased significantly afterthe 10 pg and 350 pg doses of prolactin while, the 59 and 144 pg doses induced, in contrast, a sharp increased significantly.C: In virgin mice:I Ovary uptake of galactose decreased significantly after the 10 jig and 350 pg doses, but increased signif-icantly following the 59 and 144 jag prolactin doses.•Valine uptake by the ovary elevated significantlyfollowing the 10 and 59 pg prolactin doses, while theother higher doses (144 and 350 pg) DROPed it significantly.•The only dose which affect significantly the arginineuptake by the ovary is the 350 pg dose, it induced a significant elevation in the arginine uptake by the kidney.Effect on Brain uptake of C14-Galactose, C14-Valine and C14-Arginine. A:In Immature male:s A significant DROPing in the brain uptake of galactose following different doses.s Valine uptake DROPed also significantly following the different tested doses of prolactin.a Arginine uptake in Brain showed a significant decrease after the 10 jag prolactin dose, and the 59 and 144 pg doses induced, in

contrast, a significant elevation in the arginine uptake, while the 350 pg dose induced no significant changes. B:In Immature female mices:While the 10 pg and 350 pg doses of prolactin decreased significantly the galactose uptake in Brain, the 59 and 144 jag doses induced, in contrast a sever elevation inthis uptake.Valine uptake by the brain DROPed significantly and proportionally following the different doses of prolactin.a A significant elevation in the uptake of arginine by the brain follow the different doses of prolactin has been detected.C: In virgin:a While the smallest dose of prolactin (10 jig) did not affect the galactose uptake by the brain, the other higher doses (59, 144, 350 jig) in contrast, resulted in significant DROPing of in it.a All tested doses of prolactin induced a significant decrease in the Brain uptake of valine.Arginine uptake showed sever and significant draping following the i.p. application of different doses of prolactin.