

GMAT阅读资料第38篇 PDF转换可能丢失图片或格式，建议 阅读原文

https://www.100test.com/kao_ti2020/164/2021_2022_GMAT_E9_98_85_E8_AF_BB_c89_164914.htm it was once believed that the brain was independent of metabolic processes occurring elsewhere in the body. in recent studies, however, we have discovered that the production and release in brain neurons of the neuro- (5) transmitter serotonin (neurotransmitters are compounds that neurons use to transmit signals to other cells) depend directly on the food that the body processes. our first studies sought to determine whether the increase in serotonin observed in rats given a large injection (10) of the amino acid tryptophan might also occur after rats ate meals that change tryptophan levels in the blood. we found that, immediately after the rats began to eat, parallel elevations occurred in blood tryptophan, brain tryptophan, and brain serotonin levels. these findings (15) suggested that the production and release of serotonin in brain neurons were normally coupled with blood-tryptophan increases. in later studies we found that injecting insulin into a rats bloodstream also caused parallel elevations in blood and brain tryptophan levels (20) and in serotonin levels. we then decided to see whether the secretion of the animals own insulin similarly affected serotonin production. we gave the rats a carbohydrate- containing meal that we knew would elicit insulin secretion. as we had hypothesized, the blood tryptophan (25) level and the concentrations of tryptophan serotonin in the brain increased after the meal. surprisingly, however, when we added a

large amount of protein to the meal, brain tryptophan and serotonin levels fell. since protein contains tryptophan, (30) why should it depress brain tryptophan levels? the answer lies in the mechanism that provides blood tryptophan to the brain cells. this same mechanism also provides the brain cells with other amino acids found in protein, such as tyrosine and leucine. the consumption (35) of protein increases blood concentration of the other amino acids much more, proportionately, than it does that of tryptophan. the more protein in the meal, the lower is the ratio of the resulting blood-tryptophan concentration to the concentration of competing amino (40) acids, and the more slowly is tryptophan provided to the brain. thus the more protein in a meal, the less serotonin subsequently produced and released.

1. which of the following titles best summarizes the contents of the passage? (a) neurotransmitters: their crucial function in cellular communication (b) diet and survival: an old relationship reexamined (c) the blood supply and the brain: a reciprocal dependence (d) amino acids and neurotransmitters: the connection between serotonin levels and tyrosine (e) the effects of food intake on the production and release of serotonin: some recent findings

2. according to the passage, the speed with which tryptophan is provided to the brain cells of a rat varies with the (a) amount of protein present in a meal (b) concentration of serotonin in the brain before a meal (c) concentration of leucine in the blood rather than on the concentration of tyrosine in the blood after a meal (d) concentration of tryptophan in the brain before a meal (e) number of

serotonin-containing neurons present in the brain before a meal

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