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Relationship between Natural Dietary Intake of Tryptophan and Depression Severity

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Major Depressive Disorder (MDD) is a prevalent and burdensome disorder. With the emergence of the monoamine-deficiency hypothesis, the neurotransmitter serotonin (5-HT) has been implicated in MDD pathophysiology. Though effective treatments targeting serotonergic pathways exist for MDD, numerous barriers prevent patients from accessing or continuing treatment. Tryptophan, an amino acid, is a precursor to serotonin and consumption may manipulate serotonin availability in the central nervous system, thereby presenting a potentially more accessible method of MDD treatment through modulation of dietary tryptophan consumption. The purpose of this study was to examine relationships between natural dietary tryptophan consumption and depression symptomatology to determine whether individual differences in depression symptomatology correspond with tryptophan consumption. Two hundred and forty-four Washington University in St. Louis students (192 with usable data) participated in this study by completing questionnaires assessing mood, food intake, sleep, and exercise habits. Mood, sleep, and exercise were evaluated using the Center for Epidemiologic Studies Depression Scale, Pittsburgh Sleep Quality Index Questionnaire, and International Physical Activity Questionnaire respectively. Dietary tryptophan consumption was evaluated using a novel survey assessing the type and amount of a wide range of tryptophan-containing foods. Contrary to our hypothesis that modulating dietary tryptophan consumption may mitigate MDD symptoms, no significant relationship between tryptophan consumption and depression symptomatology was found. Sleep was the only predictor of mood, which was observed in both sexes. Numerous sex differences were observed: tryptophan consumption was predicted by sex, with males consuming more tryptophan-rich foods, and more exercise predicted lower depression symptomatology only in females. Limitations of this study include lack of information on participant psychotropic use and challenges accurately quantifying tryptophan consumption. Given these limitations, future studies are recommended that take medication into account and measure tryptophan in a more direct manner.