

## 学 位 論 文 要 旨

博士課程 甲・乙	第 号	氏 名	Mahmoud Baakhtari
<p>[論文題名]</p> <p>Effects of branched-chain amino acids on immune status of young racing horses 分岐鎖アミノ酸が育成期間の競走馬の免疫系に及ぼす影響 J. Vet. Med. Sci. 84(4): 558–565, 2022 doi: 10.1292/jvms.21-0529</p> <p>[要 旨]</p> <p>Young horses, which participate in high-intensity exercise and competitions, are at increased risk for the development of infectious disease due to depression of immune function. The effects of branched-chain amino acid (BCAA) supplementation on the immune status of young racing horses were evaluated, determining whether BCAA might help to avoid or reduce immune suppression during exercise and competitions. Twenty horses (10 male and 10 female) were treated with BCAA supplementation; another twenty untreated horses (10 male and 10 female) constituted control group. Peripheral blood was collected from each animal and evaluated for lymphocyte subsets, phagocytosis analysis of monocytes and granulocytes, lymphocyte proliferative response, and expression of cytokine-encoding messenger ribonucleic acids (mRNAs). The numbers of CD4<sup>+</sup>, CD8<sup>+</sup>, and major histocompatibility complex (MHC) class II<sup>+</sup> cells in females of the treated group were significantly higher than those in females of the control group. The lymphocyte proliferative response in female of the treated group also was significantly higher than that in females of the control group. In addition, expression of mRNAs encoding interleukin 1<math>\beta</math> (IL-1<math>\beta</math>) and interferon-<math>\gamma</math> (IFN-<math>\gamma</math>) in females of the treated group was significantly higher than that in females of the control group. There were no significant differences between males of the treated and control groups. This study indicates the positive effects of BCAA supplementation in counteracting immunosuppression in young female racing horses during and following high-intensity exercise.</p> <p>育成期の競走馬は高負荷の調教と競争にさらされることで、免疫系が抑制され、感染症のリスクが増大する。本研究では分岐鎖アミノ酸(BCAA)の飼料添加が育成期の競走馬の免疫系に及ぼす影響を評価した。つまり BCAA の添加により調教と運動強度の高いトレーニングによる免疫抑制を軽減することが可能かを検討した。BCAA 投与群および対照群をそれぞれ 20 頭(牡 10 頭、牝 10 頭)に分け、試験を実施した。末梢血の評価をリンパ球サブセット解析、食食能解析、リンパ球幼若化試験、サイトカイン mRNA 発現解析により実施した。牝馬の CD4 陽性細胞、CD8 陽性細胞、MHC class II 陽性細胞の細胞数は試験群で有意に多く、リンパ球幼若化試験も同様に試験群が有意に高値を示した。サイトカイン mRNA の発現解析では IL-1<math>\beta</math> および INF-<math>\gamma</math> が試験群の牝馬では対照群と比べて有意に高値を示した。本研究は BCAA の飼料添加が育成期の牝馬において運動強度の高いトレーニングおよび運動後の免疫抑制の軽減に有用であることが示唆された。</p>			

備考 論文要旨は、和文にあつては 2, 000 字程度、英文にあつて