

### Tryptophan and Central Fatigue

#### Dopamine

- >Increases performance
- Cocaine; dopamine-drug; inhibits re-uptake of dopamine

#### Serotonin

- >Increases lethargy/fatigue
- >90% of serotonin in the GI tract
- >Synthesized from tryptophan

#### Tryptophan in the brain causes fatigue, not ingestion

- >binds to albumin (can't cross BBB)
- >BBB (only free)
- >BCAA (Leucine, Valine, Isoleucine) transports across BBB
- >Ratio generates balance

#### During exercise, lipids are oxidized at an accelerated rate

- as plasma increases, they bind to albumin
- thus, freeing more tryptophan to cross the BBB and increase serotonin

#### Carbs; How does carbs make us sleepy?

- >Insulin; signals the uptake for carbs and AA
- >Alters BCAA/Tryptophan ratio

#### Carbs during exercise:

FFA binds to albumin, increasing free tryptophan. During exercise, carbs would get the insulin response and you'll reduce the amount on FFA in the blood, maintaining the ratio. Thus, eating carbs during exercise reduces serotonin-related fatigue

#### Recap:

It's not the turkey alone that makes you sleepy, there are foods with high tryptophan, its the carbs ingested. They generate an insulin response that frees tryptophan, allowing it to cross the blood brain barrier and increases serotonin.