



## RESEARCH ■ REVIEW >

# RESEARCH >

### Purina® Omega Match™ Ahiflower® Oil is a Highly Palatable Source of Omega-3, 6, and 9 Fatty Acids, that Serves as an Alternative to Fish Oil

A SUMMARY OF RESEARCH CONDUCTED AT THE PURINA ANIMAL NUTRITION CENTER EVALUATING THE PALATABILITY OF PURINA® OMEGA MATCH™ AHIFLOWER® OIL VS. COMPETITIVE FISH OIL SUPPLEMENTS.<sup>1,2</sup>

#### < INTRODUCTION >

Purina® Omega Match™ Ahiflower® Oil is a unique plant-derived fat source that originates from the *Buglossoides Arvenis* plant. This plant is grown exclusively in the United Kingdom and processed on Prince Edward Island in Canada to produce an oil with a unique fatty acid profile; one that is high in omega-3 fatty acids such as alpha-linolenic acid and stearidonic acid, and the omega-6 fatty acid gamma linolenic acid. Typically, when horse owners want to provide increased omega-3 fatty acids to their horse, they do so utilizing either plant-derived products such as flaxseed or camelina, or via marine-derived products such as fish oil. Fish oils contain high levels of omega-3 fatty acids but are unpalatable to many horses. Most fish-derived products for horses contain strong flavors to enhance palatability and encourage intake. The objective of this trial was to evaluate the palatability of Purina® Omega Match™ Ahiflower® Oil compared to a variety of fish-derived omega-3 products designed for horses.

#### < MATERIALS AND METHODS >

In a series of trials, Quarter horses (n=5; 568.18 ± 12 kg BW) underwent intake testing to determine palatability differences between Purina® Omega Match™ Ahiflower® Oil and commercially derived fish oil products designed for horses. Briefly, horses were offered a two-choice preference testing daily at AM (0700) and PM feeding (1500) consisting of 0.90 kg of Purina® WellSolve L/S® as a base feed top-dressed with oil. At each feeding, one pan of base feed was top-dressed with 30 mL of Purina® Omega Match™ Ahiflower® Oil while the other was top-dressed with 30 mL of the desired comparison oil. Feed was mixed well in the pans to ensure uniform coating of the pellets. Each comparison oil was tested against Purina® Omega Match™ Ahiflower® Oil for a total of nine feedings resulting in 45 individual feedings. Pan location was switched from left to right between feedings so that oils were tested in all feeding orientations. Four comparisons were made during the series of tests. Horses were housed in individual stalls with free-choice access to water and turned out in drylots from approximately 0730-1430 daily. All horses were offered 2.0% BW mixed grass hay daily.

<sup>1</sup>HR 330 - Ahiflower oil palatability part 1. Internal Research, PANC. 2020

<sup>2</sup>HR 292 - Ahiflower oil palatability vs. fish oils. Internal Research, PANC. 2020

Horses supplemented with Purina® Omega Match™ Ahiflower® Oil had significantly more omega-3 fatty acids in whole blood compared to the corn oil group. Interestingly the horses fed Purina® Omega Match™ Ahiflower® Oil had ten times the level of eicosapentaenoic acid (EPA) compared to the flax-oil fed horses. **Figure 1** shows the change in total omega-3 fatty acids in whole blood following 70 days of supplementation while **Figure 2** shows the change in EPA levels after the same period of time. Two different indices of inflammation were analyzed. The ratio of arachidonic acid to DHA + EPA was significantly lower in the Purina® Omega Match™ Ahiflower® Oil supplemented horses. A second inflammation index, utilizing a ratio between total blood protein and fibrinogen was numerically lower in the Purina® Omega Match™ Ahiflower® Oil supplemented horses, but was not significant (**Table 3**).

## < DISCUSSION AND IMPLICATIONS >

These data provide strong evidence that Purina® Omega Match™ Ahiflower® Oil contains a unique fatty acid profile that can be converted through various metabolic pathways, into highly specialized fatty acids and biochemical endpoints. Further, these data provide evidence that Purina® Omega Match™ Ahiflower® Oil can support optimal levels of inflammation in horses during the stress and rigors of training, which promotes the overall performance of the horse.

FIGURE 1

Differences in total Omega-3 fatty acids from day 0 through day 70.

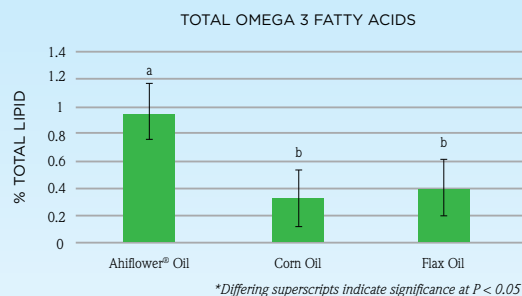


FIGURE 2

Change in eicosapentaenoic acid levels in whole blood of horses supplemented for 70 days.

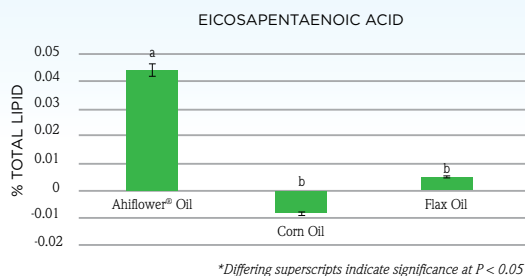


TABLE 1 FATTY ACID PERCENTS OF OILS SUPPLEMENTED TO HORSES AT 40 ML DAILY

|                      | AHIFLOWER® OIL | CORN OIL | FLAX OIL |
|----------------------|----------------|----------|----------|
| PALMITIC ACID        | 4.68           | 11.9     | 5.24     |
| STEARIC ACID         | 1.77           | 1.62     | 3.28     |
| OLEIC ACID           | 8.9            | 28.3     | 18.6     |
| VACCENIC ACID        | 0.65           | 0.78     | 0.82     |
| LINOLEIC ACID        | 12.1           | 55.5     | 15.6     |
| GAMMA-LINOLENIC ACID | 5.13           | ND*      | ND*      |
| ALPHA LINOLENIC ACID | 43.1           | 0.89     | 55.9     |
| STEARIDONIC ACID     | 21.9           | ND*      | ND*      |
| ARACHIDIC ACID       | 0.25           | 0.42     | 0.12     |
| GONDOIC ACID         | 0.49           | 0.34     | 0.19     |
| EICOSADIENOIC ACID   | 0.11           | ND*      | ND*      |

\*ND = NOT DETECTED

TABLE 2 FATTY ACID PERCENTS OF WHOLE BLOOD FROM HORSES SUPPLEMENTED FOR 70 DAYS AND CHANGE IN FATTY ACIDS FROM DAY 0 TO DAY 70

|                             | AHIFLOWER® OIL     | CORN OIL             | FLAX OIL            |
|-----------------------------|--------------------|----------------------|---------------------|
| SATURATED FATTY ACID        | 30.1               | 29.9                 | 30.2                |
| MONOUNSATURATED FATTY ACID  | 17.3               | 17.4                 | 16.5                |
| POLYUNSATURATED FATTY ACID  | 52.7               | 52.7                 | 53.3                |
| OMEGA-3                     | 2.78 <sup>a</sup>  | 1.95 <sup>b</sup>    | 3.00 <sup>a</sup>   |
| OMEGA-6                     | 49.9               | 50.8                 | 50.3                |
| LONG CHAIN OMEGA-3          | 1.41 <sup>a</sup>  | 1.09 <sup>b</sup>    | 1.28 <sup>ab</sup>  |
| LONG CHAIN OMEGA-6          | 1.95               | 1.99                 | 1.86                |
| OMEGA-6 : OMEGA-3           | 18.8 <sup>b</sup>  | 26.6 <sup>a</sup>    | 17.4 <sup>b</sup>   |
| DIFFERENCES DAY 70 - DAY 0  |                    |                      |                     |
| DIHOMO-GAMMA-LINOLENIC ACID | 0.08 <sup>a</sup>  | (0.02) <sup>b</sup>  | 0.00 <sup>b</sup>   |
| ALPHA LINOLENIC ACID        | 0.21 <sup>ab</sup> | 0.02 <sup>b</sup>    | 0.65 <sup>a</sup>   |
| STEARIDONIC ACID            | 0.17 <sup>a</sup>  | (0.01) <sup>b</sup>  | 0.02 <sup>b</sup>   |
| EICOSAPENTAENOIC ACID       | 0.044 <sup>a</sup> | (0.009) <sup>b</sup> | 0.0005 <sup>b</sup> |
| TOTAL OMEGA 3 FATTY ACIDS   | 0.96 <sup>a</sup>  | 0.33 <sup>b</sup>    | 0.41 <sup>b</sup>   |

TABLE 3 INFLAMMATORY INDICES OF HORSES SUPPLEMENTED WITH DIFFERENT OIL SOURCES FOR 70 DAYS

|                                        | AHIFLOWER® OIL    | CORN OIL          | FLAX OIL          |
|----------------------------------------|-------------------|-------------------|-------------------|
| ALBUMIN : GLOBULIN                     | 0.81              | 0.83              | 0.78              |
| NEUTROPHIL : LYMPHOCYTE                | 1.56              | 1.71              | 1.88              |
| INFLAMMATION INDEX                     | 38.1              | 43.1              | 48.2              |
| INFLAMMATION INDEX CHANGE (D 0 - D 70) | -10.3             | 1.8               | -0.003            |
| AA / EPA + DHA                         | 12.2 <sup>a</sup> | 28.2 <sup>b</sup> | 18.1 <sup>c</sup> |

\*DIFFERING SUPERSCRIPTS INDICATE SIGNIFICANCE AT  $< 0.05$

< FOR MORE INFORMATION > Contact your local Purina representative if you would like more information about this study.