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TISSUE DISTRIBUTION OF LIPID AND FATTY ACID METABOLISM AND TRANSCRIPTION FACTORS GENES IN ADULT ATLANTIC BLUEFIN TUNA (*Thunnus thynnus* L.)

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To determine expression of the major lipid pathways in tissues of adult bluefin tuna 8 individuals were used for collecting samples for tissue expression of key lipid metabolism genes. Triplicate sets of samples of brain, gills, heart, kidney, spleen, liver, intestine, white muscle, red muscle, adipose tissue ovary and testis were collected. Expression of genes was determined by qPCR.

Tissue expression profiles showed that PUFA biosynthetic pathway genes were expressed in all tissues examined, highest expression in brain, liver and testis. Elongase *elovl5* showed higher expression than desaturase *fads2d6* in all other tissues, with low expression of in red muscle and ovaries.

Transcription factors, *pparα* and *pparγ* showed parallel expression, with adipose tissue with the highest relative copy number, followed by intestine>testis>liver. The expression of *lxr* was low in liver, with highest expression in testis, brain and kidney. Similarly, *rxr* was poorly expressed in liver with higher expression in muscle, spleen and brain. The rank order of expression of *srebp1* was brain, testis, ovary, intestines, kidney, gill, liver, white muscle, spleen, heart and red muscle. For *srebp2* the highest expression was shown in brain, testis and adipose with lowest expression in heart and white muscle. Expression of *fabp2* was highest in intestine, brain and heart with lower levels in liver, red muscle, adipose and kidney. *fabp4* showed highest expression in ovaries with liver showing the lowest. *fabp7* showed highest expression levels in brain and testis with lowest values in liver. *cptI* expression was highest in brain and lowest in liver. Similarly, the relative copy number for *fas* was highest in brain followed by gonads, gill and liver, with white muscle showing lowest expression. The expression of *aco* was highest in adipose and intestine, followed by liver, kidney and brain. The expression of *hmgcl* was highest in ovary followed by adipose, brain and testis, with lowest expression in liver. Expression of *lpl* was highest in testis and lowest in ovary, with liver and white muscle, adipose, heart, gills and red muscle, kidney, intestine showing intermediate levels of expression.

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