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Thermal energy application on extrusion and nutritional characteristics of dog foods

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Highlights

- Specific thermal energy application reduced the mechanical energy required to cook and extrude
- Kibble expansion and starch gelatinization increased with higher specific thermal energy application.
- The *in vitro* digestibility of the organic matter increased with higher specific thermal energy application.
- Total tract apparent nutrient digestibility and feces traits were unaffected by increasing thermal energy application.
- Food palatability by dogs did not change by thermal energy application.

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Abstract

The aim of this study was to evaluate the effects of specific thermal energy (STE) application at the extrusion preconditioning stage on the processing parameters, starch

Abbreviations: BCFA, branched-chain fatty acids; CP, crude protein; DM, dry matter; GE, gross energy; OM, organic matter; RT, residency time of the mass at the preconditioner; SCFA, short-chain fatty acids; SG, starch gelatinization; SME, specific mechanical energy; STE, specific thermal energy; TSE, total specific energy; Temp, preconditioner temperature; T45, treatment with preconditioner mass temperature of 45ºC; T55, treatment with preconditioner mass temperature of 55ºC; T65, treatment with preconditioner mass temperature of 65ºC; T75, treatment with preconditioner mass temperature of 75ºC; T85, treatment with preconditioner mass temperature of 85ºC; T95, treatment with preconditioner mass temperature of 95ºC; $T95_{flow}$, treatment with preconditioner mass temperature of 95ºC and extruder mass flow corrected to achieve the same motor amperage of the treatment T45.

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