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Short communication

## Digestibility and metabolisable energy values of dried tomato pomace for laying and meat type cockerels

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### Abstract

Dried tomato pomace (DTP), as an alternative for other ingredients in laying hen as well as broiler diets, has shown to produce comparable or even superior performance. However, there is no report on the digestibility coefficients of DTP in poultry. The coefficient of total tract apparent digestibility (CTTAD) of dry matter, nitrogen and ash as well as metabolisable energy values of DTP alone and with enzyme were determined in laying and broiler cockerels, using the force feeding method. In two consecutive experiments, 15 adult laying-type cockerels (Hy-Line W36, 35-week-old) and 21 meat-type cockerels (Ross 308, 8-week-old) were randomly grouped into three groups of five and seven replicates, respectively. Each bird received glucose solution (30 g/50 ml), DTP alone (30 g) and DTP with Avizyme 1502 (30 g + 20 mg) and the voided excreta were collected quantitatively, for 48 h.

Adult laying-type cockerels and broilers were similar in total output of endogenous dry matter, nitrogen, ash and energy. DTP increased ( $P < 0.001$ ) total dry matter, nitrogen, ash and energy output of experimental birds. Enzyme neither reduced the output of dry matter, nitrogen, ash and energy from adult cockerels, nor improved the CTTAD of dry matter, nitrogen, ash and metabolisable energy values of DTP ( $P > 0.05$ ). However, the enzyme reduced the loss of dry matter, nitrogen and energy

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from broiler cockerels fed on DTP by 17%, 16% and 14%, respectively. The added enzyme improved the CTTAD of dry matter and nitrogen as well as the metabolisable energy values of DTP ( $P < 0.05$ ). © 2007 Elsevier B.V. All rights reserved.

*Keywords:* Dried tomato pomace; Nitrogen digestibility; Metabolisable energy; Feed enzyme

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## 1. Introduction

Wet tomato pomace is a mixture of tomato skin, pulp and crushed seeds that remain after the processing of tomato for juice, paste and/or ketchup. The proximate analysis shows that dried tomato pomace (DTP) may contain crude protein, crude fibre, diethyl ether extract, nitrogen free extract, and total ash up to 215, 398, 160, 433, and 40 g kg<sup>-1</sup>, respectively (Persia et al., 2003; King and Zeidler, 2004; Jafari et al., 2006). Substitution of DTP for other dietary ingredients led to comparable performance parameters in poultry (Yannakopoulos et al., 1992; Dots et al., 1999; Persia et al., 2003; Botsoglou et al., 2004; Jafari et al., 2006). However, DTP is limited in energy due to the high fibre content. Although dried tomato by-products have been evaluated in poultry production to some extent, most of the previous studies only evaluated the feasibility of using tomato by-products as replacements for other ingredients in growth or production trials. As there are differences in AME and TME values of dietary ingredients between broiler and egg laying strains of chickens (Spratt and Leeson, 1987) as well as between broilers of different ages (Wiseman and McNab, 1997; Zelenka, 1997), the objective of the current experiment was to determine the coefficient of apparent and true total tract digestibility of dry matter, nitrogen and ash as well as the apparent and true metabolisable energy values of DTP in both adult laying type cockerels (LTC) and 8-weeks old meat type cockerels (MTC), using the force feeding method. The possible influence of Avizyme 1502, a commercially available feed multi-enzyme, on the digestibility coefficients and metabolisable energy values of DTP was also studied.

## 2. Materials and methods

The experiment was carried out at the poultry research station, Amin-Abad Veterinary Research Institute, Faculty of Veterinary Medicine, University of Tehran. The experimental procedure was approved by the Animal Research Committee of the University of Tehran.

### 2.1. Preparation of experimental diets

A commercially available DTP (Poodre Sabz Co. Sanandaj, Iran) and Avizyme 1502 (Danisco Animal Nutrition, Wiltshire, SN8 1XN, UK.) were obtained locally. The Avizyme contained 600 FXU/g<sup>1</sup> endo-1,4 beta xylanase (EC 3.2.1.8), 8000 U/g subtilisin (protease,

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<sup>1</sup> "FXU": 1 xylanase unit is the amount of enzyme which liberates 0.15 μmol of xylose from azurine-cross-linked xylan per minute at pH 5.0 and 40 °C.

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