Biological evaluation of resistant starch and sesame whole grain

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Sesame whole grain (SWG) and type 2 resistant starch (RS-2) are considered beneficial to health. This study aimed to evaluate in vivo the use of SWG and RS-2 as sources of oil and fibers, respectively, compared to the administration of Dimethylhydrazine (DMH), used in preneoplastic lesion formation. Four types of feeds, according AIN-93G, A (standard with soybean oil/cellulose), B (SWG/cellulose), C (SWG/RS), and D (soybean oil/RS), with the same concentrations of macronutrients, were produced using a twin-screw extruder at equal temperatures for all formulations (Zone 1=60°C, Zone 2=95°C, Zone 3=100°C, and Zone 4=95°C) and a two-hole die of 6 mm diameter. The study was approved by the Ethics Committee for Animal Use (CEUA) of UNIFAL-MG, number 369/2011. Weaned (21 days old) male Wistar rats were divided into 4 groups of 10 animals, fed with animal feed and water ad libitum for 30 days, without (control, 5 rats/diet) and with and administration of DMH from day 14 to 21 (5 rats/diet). Total crypts and aberrant crypts foci (ACF) were evaluated, which are intermediate morphological markers of colon cancer. The results were evaluated by the Tukey's test (p<0.05). The animals from control diets had no crypts and ACF. The use of DMH shows that diets B (ACF=64.6 ± 23.6), C (ACF=62.5 ± 37.5), and D (ACF=46.2 ± 27.9) had significantly lowest values of crypts and ACF compared that from diet A (crypts=261.6 ± 106.8; ACF=174.3 ± 78.6). Sesame whole grain and/or RS-2 may have a protective effect on colon.

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