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## The pattern of usage of a selected combination of food additives in Irish children

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Artificial food colours and other food additives may cause adverse behavioural effects in children<sup>(1)</sup>. A recent study has assessed the effects of two combinations of food additives on hyperactivity in children<sup>(2)</sup>. The purpose of the present research was to establish the probability of the intakes of these additives (E110, sunset yellow; E122, carmosine; E102, tartrazine; E124, Ponceau 4R; E211, sodium benzoate; E129, allura red; E104, quinoline yellow) in the diets of Irish children, using the Irish National Food Ingredient Database (INFID) and the National Children's Food Survey (NCFS)<sup>(3)</sup>. The NCFS was a 7 d weighed dietary survey of 594 children aged 5–12 years. Food intake was coded at brand level and information on all packaging materials, including ingredients lists, were entered into INFID. In total over the 7 d there were 19 795 eating occasions and 72 024 foods consumed, relating to 1945 unique food codes. These food codes are adapted from UK fifth edition of *McCance and Widdowson's The Composition of Foods*<sup>(4)</sup> and *McCance and Widdowson's The Composition of Foods Sixth Edition*<sup>(5)</sup> plus supplemental volumes. These food codes are associated with 5551 different brand codes. Results are presented for (1) brand level, (2) food eating occasions, (3) per meal and (4) per d.

Of the 5551 different brand codes in the database, 5265 (94.8%) did not contain any of the seven target additives, 279 (5.0%) contained at least one of the target additives and information could not be obtained for the remaining seven brand codes (0.2%). In assessing the frequency of the seven target additives during the 72 024 eating occasions, sodium benzoate occurred most frequently (*n* 2183), followed by sunset yellow (*n* 555). Of the 72 024 food eating occasions, none involved the consumption of six or seven of the target additives. Of the 19 795 meal eating occasions, 3160 (16%) contained at least one of the target additives. Only one meal containing all seven of the target additives (0.005%) was identified (Table).

Additive-containing foods	Total	% Total	One additive	Two additives	Three additives	Four additives	Five additives	Six additives	All seven additives
One food	2876	14.5	2340	248	192	58	38	0	0
Two foods	249	1.3	46	92	45	38	18	10	0
Three foods	30	0.15	4	4	11	3	5	2	1
>Three foods	5	0.02	1	0	0	3	1	0	0
Total meals with >one additive-containing food	3160	16	2391	344	248	102	62	12	1

Multiple occurrences of the same additive within a given meal were recorded as one occurrence only.

The frequency of additive eating occasions per d showed that of the 4158 child-survey days, consumption of a food containing one target additive occurred 1272 times (30.5%), while consumption of a food containing six or seven of the target additives occurred thirty times (0.7%). These results detail the pattern of usage of seven target food additives in the diet of 594 Irish children and highlight the low frequency in which they are consumed relative to the children's overall food intake. Further work will model maximum exposure levels in the diets of Irish children.

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2. McCann D, Barrett A, Cooper A *et al.* (2007) *Lancet* **370**, 156.
3. Irish Universities Nutrition Alliance (2008) National Children's Food Survey. [http://www.iuna.net/childrens\\_survey/](http://www.iuna.net/childrens_survey/)
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